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Cultural Influences and Drinking Patterns:

A Focus on Hispanic and Japanese Populations

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Cultural Influences and Drinking Patterns: A Focus on Hispanic and Japanese Populations

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Executive Summary

This monograph on cultural influences and drinking patterns and problems is the culmination of a multinational research tradition begun in 1976 by the NIAAA-supported WHO Project on Community Response to Alcohol-Related Problems. Like the original WHO Project, the papers in this volume are cross-cultural comparative studies using social epidemiological survey methods.

In the foreword, Marcus Grant briefly summarizes the value of cross-cultural research in bringing into focus alcohol-related problems in each country's unique cultural context. International cooperation has also encouraged an openness about acknowledging problems and considering a broader range of public health measures for better coping with those problems.

An Overview of Cross-Cultural Research

Cross-cultural alcohol research has its earliest origins in travelers' observation about alcohol use—and abuse—in foreign lands. Robin Room, reflecting on cross-cultural alcohol research, provides some examples of these. He goes on to describe the characteristics of seven modes of current analysis of the relationship between alcohol and culture, viz:

1. Global syntheses draw examples from a wide range of societies and emphasize the cultural and individual functions of drinking in different societies.

2. Bounded syntheses deriving from sociology describe varied types of drinking—and nondrinking—patterns that occur primarily in industrialized societies, for example, convivial, utilitarian, and ritual drinking, as well as religiously based abstinence.

3. Hologeistic or holocultural studies are quantitative analyses based on ethnographic material and stress commonalities within a tribe, community, or ethnic group.

4. Cross-cultural diagnostic studies use diagnostic matrices such as the International Classification of Diseases for comparisons that are presumptively independent of culture.

5. Within-country ethnic comparisons in population surveys stress the enormous diversity of drinking patterns that exist in multiethnic societies.

6. Cross-national surveys, like those described in this volume, use a common core of questionnaire items to survey and compare results in different countries.

7. Cross-national trend comparisons attempt to interpret international statistics on drinking and drinking-related problems in different countries.

Room provides examples and discusses the limitations of each of these modes of comparison of drinking practices and problems. The potential value of these models as a source of new tools for the prevention and treatment of alcohol problems is emphasized.

Irving Rootman's paper describes the WHO project, which provided the foundation for the cross-cultural studies in this monograph, problems the WHO project encountered, and lessons it taught the participants. Researchers in Mexico, Scotland, Zambia, and the United States studied the nature, extent, and community responses to alcohol problems in their countries using a combination of public health data, interviews, and observational techniques based on similar data from the four countries. General population surveys employing standardized interviews yielded the most comparable data.

Some of the problems entailed—and lessons the project taught—were:

- the difficulties—and ultimate impossibility—of obtaining strictly comparable cross-cultural data

- the need to avoid invidious comparisons, i.e., adjectival comparisons taken out of context

- the problem of breaking out of one's usual mind set
- how to work with people having other cultural perspectives
- ways to overcome problems of physical distance
- how difficult it is to obtain an in-depth understanding of another culture
- deciding on an appropriate level of data analysis
- the lack of an adequate theoretical framework for considering cross-cultural alcohol problems

While none of the difficulties were completely surmounted, Rootman describes some of the ways in which they were handled and the success that was achieved.

A Far Eastern Perspective

The five papers included in this section deal with drinking patterns and problems among Japanese in Japan, Americans of Japanese ancestry in Hawaii and California, and among Koreans and Taiwanese.

Hiroaki Kono's paper reports on a survey of a stratified random sample of 1,225 Japanese over 18 years of age in four areas of Japan. An interviewer-administered questionnaire comparable to that used in the other surveys described in the monograph was employed. Demographic characteristics are described and the findings are summarized. Some of the highlights:

- Ninety-one percent of the men and 61 percent of the women reported drinking during the preceding month; 43 percent of males, but only 6 percent of females on a daily basis.
- The highest rate of abstention—nearly half (45.5 percent) the group—was found among subjects with less than 8 years of schooling. Women were more likely to be abstainers and to drink less than men.
- With respect to occupational status, men in managerial positions were most likely to be frequent drinkers (47 percent) and farmers were most likely to be abstainers (40.5 percent).

- Drinking problems rank-ordered by frequency of occurrence included blackouts, a felt need to cut down or to stop drinking, hangover at work, regret over one's drinking, a physician's warning regarding excessive drinking, and morning drinking.

- Ten times as many men as women (3.2 percent versus 0.3 percent) reported having lost a job as the result of drinking.

- Trouble with the law or the police was reported by 4.3 percent of men, but by only 0.9 percent of women.

- Of males, 7.8 percent versus only 0.5 percent of females were categorized as "serious problem drinkers" (i.e. having a high probability of being diagnosed alcoholic by clinicians) using KAST, a Japanese test for detecting drinking problems.

Tooru Tsunoda, in a parallel paper also based on the Japanese survey, provides some additional highlights:

- Nearly a third of the male respondents (32.8 percent) reported consuming more than 21 ounces of absolute alcohol per biweekly period. Only 3.6 percent of women consumed that much.

- Consistent with data reported in the West, divorced people reported more drinking problems than those who were married.

- Percentages of drinkers were generally higher in urban than in more traditional rural areas; this was especially true for women; only 31 percent reported drinking in the rural sample compared to 81 percent in one of the urban areas.

Walter Clark and Michie Hesselbrock provide a comparative analysis of drinking patterns in the total sample of Japanese cited above, in two samples of Americans of Japanese ancestry, (one from Oahu, Hawaii, and the other from Santa Clara County, California) and a Caucasian sample from Santa Clara County. Highlights of these comparisons:

- The highest proportions of current drinkers were found among Japanese men in Japan (91 percent) followed by Caucasian men in Santa Clara (85 percent), Japanese men in Santa Clara (84 percent), and Japanese American men in Hawaii (80 percent).

- The proportions of women who drink were lower than men: Caucasian women, 81 percent; Japanese American women in Santa Clara, 75 percent, in Hawaii, 68 percent; and Japanese women, 61 percent.

- Japanese men were more often frequent drinkers than Caucasian men (62 percent versus 44 percent more than three times a week), who were more often frequent drinkers than Japanese American men in Santa Clara or Hawaii (29 percent and 32 percent, respectively).

- Beer was the most popular alcoholic beverage, especially among men, in all four areas.

- Japanese and Japanese Americans asked to rank order nine reasons for drinking gave responses of different frequency. For example, 94 percent of the Japanese compared to 60 percent of the Japanese Americans from Santa Clara and 63 percent of the Japanese Americans from Hawaii reported "drinking is a good way to celebrate" as an important or somewhat important reason for drinking.

- Drinking problems in the past year most frequently reported by Japanese men included blackouts (27 percent), feeling effects at work (27 percent), being advised to cut down by others (25 percent), and feeling a need to cut down (25 percent).

Harry Kitano and his colleagues provide a detailed analysis of alcohol consumption based on the Japanese data, the Hawaiian data, and data from both the Santa Clara County study and a study done in Los Angeles. These samples included Japanese, Japanese Americans and in Santa Clara County, both Japanese Americans and Caucasians. Highlights of their paper include the following:

- A review of Japanese drinking patterns in recent decades indicated marked changes. For example, alcohol consumption increased more than threefold and cirrhosis deaths more than doubled between the early 1950s and the early 1970s.

- Japanese Americans in Los Angeles drank more than those in Santa Clara County.

- With the exception of the Caucasian sample, the percentages of drinkers were generally higher among the most educated and those of higher income.

- Among Japanese Americans in Santa Clara County and in Hawaii, the highest proportion of drinkers were in the third generation, the lowest in the second generation.

- Regular church attendees were least likely to be drinkers.

- Drinking styles among Japanese Americans as they have evolved through generations reflect the influence of ethnic origin but are the complex result of community and family cohesion, degree of community acceptance, and other life experiences.

Joe Yamamoto and his colleagues in a wide-ranging paper summarize cultural differences and drinking behavior among Chinese in Taiwan, Japanese, and Koreans both in Korea and in the Los Angeles area. They also summarize research on flushing, a reaction to alcohol ingestion that is more common in Asians than in Caucasians because of differences in alcohol metabolism. Some of their observations:

- In Korea, male heavy drinking is accepted as a tradition.

- Patterns of migration appear to affect drinking in that Chinese who have moved to Taiwan drink more heavily than those in China; conversely, Koreans who have migrated to Los Angeles drink less.

- Factors involved in these differences may reflect cultural differences but may also involve selective migration and possibly other factors as well.

The Flushing Reaction

The physiological reaction of flushing, often accompanied by other disulfiram-like reactions after ingesting alcohol, occurs much more often in those of Asian ancestry than in those of non-Asian ancestry. This is presumptively due to differences in alcohol metabolism, which markedly increase the levels of blood acetaldehyde when drinking in those who flush. Two of the papers included in this monograph focus primarily on the flushing response, one based on the Japanese survey (Ogato and Tsunoda), the other on a comparison of the Japanese findings and those of the surveys conducted among Japanese Americans in Hawaii and Santa Clara County and Caucasians in Santa Clara County (Clark).

Highlights of Ogato and Tsunoda's paper:

- Facial flushing was reported as always occurring by 44 percent of Japanese (46 percent of males and 40 percent of females); flushing in other parts of the body was reported by 26 percent of males and 20 percent of females.

- Flushers drank less frequently than nonflushers, though over three-quarters (78 percent) of the males and nearly half (48 percent) of the females who flushed were able to continue to drink.

- More women reported feeling embarrassed by flushing, suggesting flushing may be a greater psychological drinking barrier for women than for men.

- More male nonflushers than flushers reported being concerned about becoming alcoholics if they drank.

Highlights of Walter B. Clark's paper:

- Flushing was much more common in the samples of Asian ancestry than in those of Caucasian origins. For example, 71 percent of the Japanese men reported flushing "always" or "sometimes," while only 20 percent of the Caucasian men surveyed reported this.

- Survey data of the type collected did not distinguish between those who flush rapidly in response to small amounts versus those who may flush only in response to much larger amounts (perhaps more typical of Caucasians).

- Flushing among those of Japanese ancestry, whether in Japan or in the United States was significantly correlated with drinking less in the 2 weeks preceding the surveys; the trend in the Caucasian sample was similar but there were too few flushers to achieve statistical significance.

- Among current drinkers, those who flush not only drink less when they drink but tend to drink less frequently than nonflushers.

- Attempts to factor analyze the relationship of 12 possible reactions to alcohol into meaningful patterns that yielded a clear underlying structure were not successful.

A Hispanic Perspective

Three papers deal with drinking patterns and problems in population samples of Hispanic background. They include papers based on a survey done in Mexico (Medina-Mora), one done in Madrid (Martinez, Sanchez, and Perez), and a comparison of these data with data obtained from a survey of Americans from the 48 coterminous United States self-identified as being of Hispanic origin (Caetano).

The Mexican research employed two samples, one from Mexico City and the other from rural and urban areas of the State of Michoacan. An index based on frequency and quantity of alcohol consumed was used. Highlights of Medina-Mora's paper:

- While frequent drinking was found to be relatively uncommon, drunkenness is not, especially among males—only 25 percent of males reported *not* having been intoxicated in the previous year.
- Ten percent of male respondents in Mexico City reported drinking at least once a week and a large quantity (200 ml and over absolute alcohol) consumed per drinking occasion.
- Over half the women (53 percent) in the Mexico City sample, and two-thirds (66 percent) in the more traditional Michoacan sample were abstainers; women who drink are most likely to do so lightly and infrequently.
- In the rural sample of Michoacan, frequent heavy drinking was more common than in the urban sample; 15 percent of males under age 40 reported drinking in this manner.
- Rural males—who also drank more than urban men—reported more drinking-related problems.
- Nine out of ten males (89 percent) and nearly half (46 percent) the females who reported having drinking problems were frequent heavy drinkers.
- The most commonly reported reason for drinking given by male respondents in Mexico City (63 percent) was "having a drink with someone is a way of being friendly," followed by "it is what most of my friends

do when we get together" (55 percent), and "it does people good to get drunk once in a while" (50 percent).

- In Michoacan there was less of a consensus regarding reasons for drinking; the only reason subscribed to by a majority of male (and female) drinkers was "having a drink is one of the pleasures of life" (52 percent of the sample endorsed this).

Martinez, Sanchez, and Perez reported on drinking in the Madrid area. Highlights include the following:

- Men are rarely (4 percent) abstainers compared to women (17 percent); among frequent heavy drinkers men outnumber women by 5 to 1.
- Nearly a quarter (24 percent) of young males (18 to 29) reported they drink frequently and heavily compared to 1 in 16 women in the same age group.
- Drinking in both sexes tends to decrease in frequency and quantity in older cohorts.
- Frequent consumption of small quantities is the modal drinking pattern in Madrid.
- Alcohol-related problems are relatively uncommonly reported. (For every problem scale, 9 percent or less of the males acknowledged problems related to drinking; 2 percent or less of females did.)
- Since both drunk driving and drinking in relation to work are tolerated unless the behaviors are extreme, problems in these areas may be understated.

Raul Caetano, in his comparative analysis of the Spanish, Mexican, and U.S. Hispanic data, makes several major points:

- Each of the cultures studied shows characteristic drinking patterns: in Madrid, drinking is widespread, frequent, and usually light to moderate; in Mexico it is infrequent and heavier and regarded as the prerogative of adult men. Drinking among U.S. Hispanics is more diverse than that reported from Spain and Mexico, which may reflect the greater geographic and cultural diversity of the groups studied.

- Alcohol consumption by U.S. Hispanics may also reflect the adoption of prevailing norms of the diverse communities in which they live, which are more varied than the more traditional norms in Mexico or Madrid.

- The greater homogeneity of alcohol consumption in Mexico and Madrid may, however, mask differences that are related to such variables as class, urban versus rural residency and origins, ethnic identity, and historical origins, and that should be further investigated.

The Lessons Learned—A Summing Up

This section of the monograph contains a distillate of the discussion by symposium participants[1] of some of the caveats, issues, problems, and public health implications of cross-cultural research. The major points emphasized included the following:

- The importance of the researcher being sensitive to the possible political implications of the research and minimizing the possibility of its being used to make invidious comparisons.

- Researchers from countries with well-developed research resources have an obligation to provide training and to encourage developing an indigenous research capability and tradition.

- The relevance of public health promotion to designing research and the importance of presenting research results so that they are easily understood and useful to those responsible for health promotion were stressed.

- The difficulties of interdisciplinary communication that must be overcome, even when all those involved are nominally epidemiologists, were emphasized.

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[1] The International Symposium on Patterns of Alcohol Use and Misuse Among Different Populations held in Washington, DC, in August 1986 provided the initial context for the presentation and discussion of first drafts of the papers included in this monograph.

- There are potential problems of cross-cultural differences affecting responses even when the survey questions used are the same in both cultures.

- Multiple measures of a single concept are essential to provide indicators of internal consistency, reliability, and validity.

- The way in which data were obtained (e.g., adequacy of diagnoses, sources of public health statistics) must be considered.

- From an ethnographic perspective, these aspects were stressed: making use of the ethnographic record, having someone familiar with the culture interpret findings, taking a holistic approach, considering marital and family patterns, seasonal variations, and gender differences.

- Discussion of the clinical perspective emphasized cross-cultural differences, as exemplified by Japanese and Western assumptions and approaches to treating alcoholism.

- The complementarity of an epidemiological and clinical perspective in providing a better rounded picture than either alone was emphasized.

- The meaning of symptoms in different cultures, the interpretations of abuse and dependence, and differences in clinical populations and in ways of providing treatment are all relevant to interpreting cross-cultural findings.

- The findings discussed at the symposium (and included here) were based primarily on survey research; the importance of using a range of alternative approaches was stressed.

Overall, the discussions held during the symposium reflected the complexity and subtleties underlying cross-cultural research. Even when similar techniques and/or questionnaire items have been used in such research, it can not be assumed that similar data have the same implications in different cultures. Even the most carefully translated questionnaire items may not have the same connotative meanings in different cultures. Finally, the reports discussed at the symposium illustrate that patterns of acceptable alcohol use and what is considered to be alcohol abuse vary markedly in different cultural contexts.

Foreword

Cross-cultural research is by its nature complicated, uncertain in its outcome, and often plagued by unanticipated problems. Those involved in such research frequently lose their normal sense of time and become immersed in the activity to the virtual exclusion of other concerns. They can underestimate the methodological difficulties involved in even the most straightforward arrangements. Finally, the fervency of their desires often exceeds their capacity to fulfill them.

At its best, however, cross-cultural research is exciting, stimulating, includes the unexpected, and is ultimately rewarding. Even its greatest difficulties can come to seem rewarding. Certainly it is not to be entered into by those lacking in a sense of adventure.

A central assumption of cross-cultural research is that our understanding of a problem can be enhanced by comparing similar phenomena in different settings. But this assumption actually embodies two conceptual threads. The first is that *unrelated* research dealing with the same phenomenon in different settings—even were the research in other respects conceptually and methodologically similar—yields less useful results than if the comparative perspective is part of the study from its outset. A second implicit assumption is that by comparing the same phenomenon in different cultural settings, we will not only learn more about the phenomenon, but also about the settings in which the research is being conducted.

From a public health perspective, these two strands are certainly complementary. With respect to alcohol studies specifically, an important dimension is added when drinking is studied within the cultural contexts in which it occurs rather than dissociated from them.

Since one consequence of the cross-cultural approach is being able to distinguish between universal elements and those specific to particular settings, it is possible to increase our understanding incrementally. Understanding of the phenomena is increased because the design facilitates identifying their essential aspects as well as those aspects that vary depending on the cultural setting.

The World Health Organization project on Community Response to Alcohol-Related Problems illustrates the application of these basic assumptions underlying cross-cultural research. Chapter 6 of the NIAAA monograph describing the study[1] and summarizing its conclusions reports striking intracultural and intercultural differences among the countries studied with respect to their drinking patterns, cultural definitions of drinking, alcohol-related problems, and response to those problems. It also notes some striking similarities in all those areas. The Community Response study, which could so easily have led simply to packaging three separate parcels of data on similar phenomena, in reality achieved much more than that. It enhanced our understanding of the different meanings of drinking, how it can lead to problems, and what some communities have been able to do about them.

One of the strengths of cross-cultural research in public health is its potential ability to point to etiological factors involved in the onset and progression of a specific disease and to distinguish their relative potency.

It is a tribute to the farsightedness of those who designed the WHO study that they were not only aware of the methodological maze they were entering, but that they also decided to take the maze itself into account in the study's design. "Drinking" means more than swallowing beverages containing ethanol. Its meaning includes the values, norms, habits, and social context in which the behavior occurs. It also includes the pharmacological effects alcohol has on the human body—as well as the economic system supplying the alcohol and the marketplace in which it is sold. Should drinking problems ensue, it includes the police, the courts, the emergency room, the psychiatrist, the social worker, the traditional healer, the rehabilitation center, etc. In short, all the many components that make up the community's response to the problems created by alcohol abuse are also part of the meaning of drinking.

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[1] I. Rootman and J. Moser, *Community Response to Alcohol-Related Problems: A World Health Organization Project Monograph*, ADAMHA, Pub. No. (ADM)85-1371 (Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1985).

Given this complexity, what can cross-cultural research contribute? Isn't there a danger that such research will add to the confusion rather than clarifying the complexity? One problem is that it is all too easy to accumulate far more data than can readily be handled. Those responsible for analyzing the community response data freely admit that much useful work remains incomplete and may never be finished. But cross-cultural research also forces the researcher to consider the essential questions the study is intended to answer. Instead of analyzing all the data in sight, its sheer volume demands focusing more precisely on what one really wants to learn. If a map of the maze is too much to hope for, let us be content with some simple instructions for others who might otherwise find themselves lost in it. This is one function the WHO publication[2] and this monograph share.

There is an underlying optimism—despite the difficulties—that cross-cultural researchers must share. The researcher, surveying the accumulations of connected, partially connected, and disconnected pieces of information accumulated in a study is searching for a pattern in the apparent chaos. Patterns imply order and order implies meaning. The optimism lies in the hope that this pattern will reveal meaning and that finding a pattern is therefore a worthy aim in itself.

From a public health standpoint, it is less important that a pattern emerge than that the pattern permit the underlying problem to be better understood or, preferably, alleviated. It may be argued that any pattern has this potential in contrast to isolated facts, which do not. If this is so in any single culture, it is still more relevant from a cross-cultural perspective in that connections between cultures as well as within a country may be found. Sometimes it is the absence of some element from the pattern that makes the public health utility of the study apparent. The Community Response project revealed that although there was a generally tolerant view of male drunkenness across cultures, driving while drunk was viewed much less tolerantly. Here, then, is an opportunity to build on a widely existing social norm conducive to public health.

Despite the desire to find patterns, it is important not to manufacture false patterns or to pretend partial truths are universal. One of the strengths of the Community Response project was its reluctance to create order where none was apparent. But well-designed cross-cultural research, if it is to be useful, must have implications for action. Through such research it should be possible to see where public health improvements can be made in ways that would not have been possible without the research. While the research results will sometimes simply provide the *opportunity* for positive change, other times they may pinpoint more precisely *what* can be changed and *how*. In either case, it is the fact that there *is* a connection between the research and its application that redeems and illuminates the results.

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[2] I. Rootman and J. Moser, *Guidelines for Investigating Alcohol Problems and Developing Appropriate Responses*, WHO Offset Pub. No. 81 (Geneva: WHO, 1984).

This is not to say results of cross-cultural research can always be easily translated into action. Obstacles to doing so may be formidable. They may include economic, political, social, and cultural forces far more powerful than a few modest research papers published in academic journals in distant lands. It is also rare that findings are so overwhelmingly persuasive that no opposition is raised to possible action alternatives suggested by them. However, such results can provide individuals with the tools for beginning the processes of change. Like agricultural implements or military weapons, however, these tools are only neutral when they are not being used. When turned to a purpose they become instruments for progress or destruction.

One of the exciting features of the Community Response project is that it included within its design examining ways in which its results could be applied. In reviewing community resources, it recognized the interconnectedness of agencies and their influence over local and national decision-making. In a real sense, the study was also a study of the capacity of communities to respond to an impetus for change. If we were to return to the communities in Mexico, Scotland, and Zambia and try to find out what changes occurred wholly or partly as a result of the cross-cultural research conducted there, it would probably be difficult to precisely specify them. But this work would undoubtedly have left traces in a range of different institutions. Its traces could be found in the universities and ministries of health, the treatment centers and schools, the police headquarters, and the village councils.

The traces would sometimes prove elusive. Like something detected out of the corner of the eye, they might seem to vanish when we looked at them directly. What finally emerged from the Community Response project were, after all, not hard and fast new laws or institutional innovations. Rather, what emerged was a new kind of honesty and openness about alcohol-related problems. In looking at the usefulness of cross-cultural research for public health planning, it is not necessary to point to revolutionary changes. If the research has enhanced the capacity for further development, that is surely noteworthy and sufficient.

What Griffith Edwards wrote in his introduction to the earlier report of the original WHO Community Response project can be said of this monograph as well:

> The project has been a shared experience—a pooling of expertise, common planning, mutual support at every stage of field activity, shared scrutiny of the meaning of results. To this end, we have met in conference rooms, exchanged papers, and corresponded, but more importantly, we have visited each others' countries, walked each others' streets, gone into homes, and tasted opaque beer ladled out for us in a plastic billy-can.

Reading such a description, can anybody doubt that whatever its scientific value, whatever its public health relevance, cross-cultural research is essentially an undertaking for romantics? And who can fail to believe that the world will not benefit from these efforts?

Marcus Grant
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Introduction

Leland H. Towle[1]

This monograph represents the culmination of a research effort begun 11 years ago—in September 1976—when the World Health Organization (WHO) began its project on Community Response to Alcohol-Related Problems. This multinational project, which the National Institute on Alcohol Abuse and Alcoholism (NIAAA) helped support, involved Mexico, Scotland, and Zambia, as well as affiliated research in Canada and the United States. The WHO Community Response project spanned a 7-year period. It produced a wealth of information about patterns of alcohol consumption, alcohol-related problems, and community attitudes and responses and spurred action programs in response to local and national alcohol problems in the countries involved.

The WHO project became the cornerstone for both WHO's emerging alcohol program and for NIAAA's international program as well. The WHO project emphasized cross-cultural comparative studies using social epidemiological surveys as the principal research methodology. This emphasis on epidemiology has continued to the present day. It is the most fully developed of the three major areas of international alcohol research emphasis. As noted in the Institute's 1986 International Program Report, "this [emphasis] was a reflection both of a recognition of U.S. benefits from increased knowledge on the use and misuse of alcohol in different cultures and populations and of the interests and needs expressed by International agencies and foreign countries/institutions."

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[1] Director, International and Intergovernmental Affairs, National Institute on Alcohol Abuse and Alcoholism, 5600 Fishers Lane, Rockville, MD 20857.

As the WHO project became more visible and its methods and findings more widely disseminated, other countries expressed an interest in taking a similar approach to understanding their alcohol problems and possibly developing new ways of coping with those problems.

The Japanese Comparative Study

In October 1980 a joint statement on U.S.-Japanese scientific cooperation on alcohol-related problems was agreed to by the Alcohol, Drug Abuse, and Mental Health Administration, its National Institute on Alcohol Abuse and Alcoholism, and the Japanese Ministry of Health and Welfare and its National Institute on Alcoholism. It was the first such agreement to be developed in the health area under the two countries' Science and Technology Agreement for Non-Energy Research and Development signed on May 1, 1980.

In 1983, the first major American-Japanese collaborative project was initiated—a comparative cross-cultural community-based study of drinking patterns and related behavior in Japanese and Japanese American populations. The primary purposes of this collaborative study were:

1. to carry out baseline analyses examining cross-cultural similarities and differences in alcohol consumption and drinking patterns and alcohol-related problems, and to study attitudes toward alcohol use and the perceived need for improved societal responses to ameliorate these problems, and,

2. to test the hypothesis that the flushing reaction to alcohol ingestion, which is common in those of oriental ancestry, is inversely related to the extent of alcohol consumption and alcohol-related problems in those who experience it.

The research involved population samples of Japanese ancestry from four areas of Japan (Sapporo, Osaka, Shizuoka, and Kochi) and from two counties in the United States (Oahu County, Hawaii, and Santa Clara County in California). The Japanese researchers completed a data analysis and prepared reports of their findings in May and September of 1985. The U.S. investigators completed their initial analysis of the American data in September 1985, and an interim technical report the following month. The comparative analysis of the data sets from the two countries was begun in early 1986 and its results were first presented at the International Symposium on Patterns of Alcohol Use and Misuse Among Different Populations held in Washington, DC, in August 1986.

The Mexican Cooperative Study

In March 1982, an Agreement for Scientific Cooperation on Alcohol-Related Problems was also established between NIAAA and the Mexican Institute of Psychiatry (MIP). This agreement was in accord with the provisions of an earlier (1972) Agreement for Scientific and Technical Cooperation between Mexico and the United States. The establishment of MIP in 1979 provided a research locus for Mexican involvement in the WHO project as well as for a formal program of cooperation between NIAAA and MIP. Investigators at MIP had expressed an interest in conducting periodical epidemiological surveys similar to those done under the WHO project in various other geographical areas.

In the fall of 1983, the Alcohol Research Group (ARG) of the Institutes of Medical Sciences (also a National Alcohol Research Center supported by NIAAA) initiated a national survey of alcohol consumption and alcohol-related problems in the U.S. general population. A special component of that survey was an in-depth study of black and Hispanic members of our population. The ARG had been involved in the WHO project with an affiliated project in California using similar protocols and had served as the focal point for the international analysis of data from the earlier work. As a result, the ARG had already collaborated with the MIP. The opportunity for a new collaborative study with Mexico was a welcome outgrowth of the earlier collaboration and ARG's role in studying our own Hispanic population. Although planning was begun immediately, it was not until 1984 that plans were completed and funds needed for the Mexican research could be obtained.

The Mexican study in the State of Michoacan included a general population sample of 800 households in the urban sector of Morelia as well as 400 households in rural Tarimbaro County. The results of this study and of the comparative analysis of the data from both the United States and Mexico were also presented for the first time at the International Symposium.

Cooperative Study in Spain

In the winter of 1982-83, the U.S.-Spain Joint Committee on Science and Technology elected to place greater emphasis on health by establishing the U.S.-Spain Science and Technology Health and Medical Sciences Research Grant Program. A series of site visits and exploratory discussions involving Spanish scientists and the Director of the Alcohol, Drug Abuse, and Mental Health Administration's International Program were held in June of 1983. They led to the conclusion that alcohol research was a mutual high priority, key interest. A joint alcohol research planning seminar was therefore organized and held in Barcelona in February of 1984. Four research projects (two biomedical and two epidemiological) out of eight that were ultimately developed were approved and subsequently funded by the U.S.-Spain Joint Committee on Science and Technology. One of these was the alcohol epidemiology project in the region of Madrid that was initiated in July of 1985. The Regional Institute of Studies on Health and Social Services in Madrid was responsible for this project, with NIAAA serving as the principal U.S. focus. Collaborators included investigators from the ARG, the Johns Hopkins University School of Public Health, and the Mayo Clinic in Rochester, Minnesota.

The main purpose of the Madrid project was to estimate the prevalence and characteristic profile of alcohol use and misuse in that region as well as hospital and medical care utilization related to alcohol consumption. Because of the opportunities for cross-cultural comparison, the same basic collection protocol was used in Madrid as that used in the Mexican and U.S. general population Hispanic studies. The Madrid study involved a sample of 3,500 from the general population and a survey of 1,500 members of the medical population of Madrid's hospitals. The study attempted to validate the Self-Administered Alcoholism Screening Test (SAAST).

The International Symposium and the Monograph

The International Symposium on Patterns of Alcohol Use and Misuse Among Different Populations was also an outgrowth of the original WHO project and the ensuing cross-cultural research program in Japan, Mexico, and Spain. The meeting provided an opportunity to present data from these more recent Japanese, Mexican, and Spanish studies, to compare their findings, and to reflect on what had been learned from these studies and the predecessor WHO project about that most intriguing and difficult process, cross-cultural research.

Like the studies on which it was based, the symposium provided an unusual opportunity for participant interaction concerning what had been learned, problems in interpretation, and possible future directions. Marcus Grant's perceptive foreword captures something of the excitement, the frustration, and the rewards of this ongoing shared adventure. This monograph represents an attempt to convey the spirit of the symposium, to make available to a larger audience its findings and their public health implications, and to convey some of the formidable issues and problems that are involved in this type of research.

An Overview of Cross-Cultural Research

Cross-Cultural Research in Alcohol Studies: Research Traditions and Analytical Issues[1]

Robin Room[2]

Comparisons of drinking customs have long been a staple of those who have both some experience of travel and a point to make. Martin Luther complained of "the abuse of eating and drinking which gives us Germans a bad reputation in foreign lands," observing that "the Italians call us gluttonous, drunken Germans and pigs because they live decently and do not drink until they are drunk. Like the Spaniards, they have escaped this vice" (Austin 1985, p. 147). A few decades later, the Englishman Fynes Moryson offered vivid characterizations of early 17th-century European drinking habits as he observed them on his travels. He agreed with Luther about the Germans: "let the Germans pardon me to speak freely . . . to their drinking they can prescribe no meane nor end." As the gates of cities in Saxony were being shut at night, he noted, the homeward bound "reele from one side of the streete to the other. . . . For howsoever the richer sort hide this intemperance for the most part, by keeping at home, surely the vulgar yeeld this daily spectacle" (Austin 1985, p. 213). While Moryson noted that those who "offend in Drunkenness" in Switzerland could be imprisoned and forbidden to drink for a year, he found that "generally the Switzers drinke as stiffly, as

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those of the upper part of Germany" (Austin 1985, p. 215). The French, on the other hand, he saw as paragons of moderation: "Drunkenness is reprochefull among the French, and the greater parte drinke water mingled with wine." While mariners, soldiers "and many of the common sort" got drunk on perry, cider and wine, Parisian "women for the most part, and virgins alwaies . . . drink water" (Austin 1985, p. 212). English patterns, as described by Moryson, also were on the whole moderate:

> the English at a Feast will drinke two or three healths in remembrance of speciall friends, or respected honourable persons, and in our time some Gentlemen and Commanders from the warres of Netherland brought in the custome of the Germans large garaussing [carousing], but this custome is in our time also in good measure left. Likewise in some private Gentlemens houses, and with some Captaines and Souldiers, and with the vulgar sort of Citizens and Artisans, large and intemperate drinking is used; but in generall the greater and better part of the English, hold all excess blameworthy, and drunkenness a reprocheful vice.
>
> (Austin 1985, p. 211)

In Ireland, Moryson reported much drunkenness among both the common people and the Anglo-Irish, and found especially notable the heavy drinking by women:

> In many families, especially at Feasts, both men and women use excess [of whiskey]. . . . Some Gentlewomen were so free in this excess, as they would kneeling upon the knee and otherwise garausse Health after Health with men; not to speak of the Wives of Irish Lords . . . who often drink till they be drunken, or at least till they void urine in full assemblies of men, I cannot (though unwilling) but note the Irish women more specially with this fault, which I have observed in no other part to be a woman's vice, but only in Bohemia.
>
> (MacManus 1939, pp. 19-20)

Then as now, such national characterizations and implicit cross-national comparisons serve many purposes. They have a certain curiosity value. Beyond this, they remind us both of the extent of differences in the human family and of some commonalities. They are also often used as a kind of measuring stick for one's own society. Those wishing to raise the level of concern about drinking in their own society, for instance, will frequently appeal to the international league-table of alcohol consumption levels. National characterizations from different periods can also remind us of the fact of cultural change; Moryson's characterization of English drinking, for instance, stands in stark contrast to the picture Hogarth and others painted of drinking during the "gin epidemic" a little over a century later (Coffey 1966).

Cross-cultural data can also be used for broader analytical purposes, to increase our understanding of the nature and relative contribution of cultural and other factors to drinking patterns and problems. This paper starts from a set of thumbnail characterizations of the different traditions of such cross-national data collection and analysis and proceeds to a discussion of some issues raised by such analyses. It is not a comprehensive review of the literature, since there are by now a number of such reviews of part or all of the literature. (For instance, see Heath 1975, 1984; Leland 1980.) Rather, the intent is to offer some background and perhaps a framework for discussion, emphasizing particularly modes of analysis and conceptual issues in analysis that are not otherwise covered in this compilation.

Modes of Cross-Cultural Analysis

Global Syntheses of Alcohol and Culture

By this is meant discussions of drinking practices in human societies that draw examples from the whole range of such societies and that attempt to draw some general conclusions. While such discussions are usually undertaken by anthropologists or those in command of the anthropological literature on village and tribal societies, complex industrial societies are usually included within their scope. A much-reprinted example of such discussions is Mandelbaum's essay, "Alcohol and Culture" (1979), but examples in the modern literature reach back to a summative lecture by Horton (1945).

A mainstay of such discussions has been a consideration of the varied cultural and individual functions of drinking. As Heath has noted (1975), while explicitly functionalist analyses have gone out of fashion in anthropology, much of the discussion is still implicitly in terms of functions of drinking. Anthropological discussions frequently emphasize that alcoholic beverages can serve as a food and a thirst quencher, and a variety of symbolic roles, besides serving as an intoxicant.

A commonplace in anthropological syntheses has been a contrast between complex industrial countries and tribal and village societies in the prevalence of alcoholism or of alcohol problems. Two quotations from Heath's 1975 review article epitomize this perspective:

> Alcoholism—even in the general sense of problems associated with drinking—is rare in the vast majority of the societies of the world. One might even go so far as to note that it is almost unknown outside the mainstream of Western culture, although it is becoming a widespread concomitant of acculturation which often accompanies the impact of modern industrial society.
>
> (p. 56)

> There are very few primitive or other non-Western societies in which habitual drinking in indigenous ways is a major cause of family problems.
>
> (pp. 40-41)

The notion that alcoholism might be especially prevalent in complex societies is not a new one. The idea of a kind of reverse evolutionary trend for mental disorders in general, and alcoholism in particular, dates back at least to the heyday of social Darwinism (Bynum 1984), though the policy conclusions drawn then differ from those that would be drawn now. Selden Bacon's influential 1945 essay, "Alcohol and Complex Society," had developed the idea in some detail. Recently, in line with trends in the current literature, Heath has somewhat modified his position. Noting that the "widespread belief that aboriginal cultures are characterized by low rates of 'social pathology,' and that such acts increase markedly as acculturation progresses" was supported by little evidence, he has suggested it might be, "at least in part, a vestige of the romantic idealized image of 'the noble savage'" (Heath 1983, p. 369). More specifically, concerning the literature on alcohol and North American Indians, he noted that

> although my work—like that of some other ethnographers—has tended to emphasize some of the ways in which drinking fits well with other aspects of local cultures and reinforces social solidarity, it is obvious that alcohol-related problems are important and threatening to many groups as well as individuals, and that the

> deleterious effects of drinking seem to outweigh the benefits in a number of American Indian populations.
>
> (Heath 1983, p. 363)

Perhaps the most influential synthetic global statements in recent years have focused attention not so much on why and how people drink, but rather on the control of drunken behavior. MacAndrew and Edgerton's book, *Drunken Comportment* (1969), it is true, pays substantial attention to variations in behavior while drinking, ranging widely in the ethnographic and historical literature to construct an argument that drunken behavior is not pharmacologically determined. But the authors view drunken behavior as a product of cultural definitions and controls; the lesson of the book is epitomized in its last sentence: "Since societies, like individuals, get the sorts of drunken comportment that they allow, they deserve what they get." The wide influence of MacAndrew and Edgerton's analysis can be seen in the papers in a recent NIAAA monograph (Room and Collins 1983).

Even more explicitly focused on the societal control of drinking is Lemert's 1962 essay on alcohol and social control. Ranging widely in its examples across different societies, the paper offers a typology of five societal methods of social control over alcohol use: laissez-faire, prohibition, education, alcohol controls, and promotion of functional equivalents. (See also Lemert 1958.) Commenting on this paper, Bruun (1971) suggested an alternative typology of societal efforts to control alcohol-related harm: that efforts could be directed "towards the phase of choice" to use alcohol at all, toward manipulating the circumstances of use, or toward minimizing "the consequences of use." The tradition initiated by Lemert of analyzing control strategies at a societal level has been picked up in alcohol policy discussions; Bruun's typology found its way, for instance, into the 1981 National Academy of Sciences report on alcohol policy (Moore and Gerstein 1981).

Bounded Syntheses of Alcohol and Culture

A somewhat separate tradition of general theoretical analyses of alcohol and culture, more or less limited in its comparisons to industrialized societies, has been rooted primarily in the sociological literature. In a paper deriving from his 1944 dissertation, Bales (1959) proposed three kinds of drinking differentiated by their functions—ritual drinking, convivial drinking, and utilitarian drinking—along with a fourth cultural pattern of religiously inspired abstinence. While ritual drinking is seen as functional for the culture or group as whole, in utilitarian drinking, as Bales presents it, the functionality is individualistic: "the purpose is personal and self-interested rather than social and expressive" (p. 267). "Convivial drinking is a mixed type, tending toward the ritual in its symbolism of solidarity, and toward the utilitarian in the 'good feeling' expected" (p. 273).

Bales applied his theoretical frame to an analysis of Irish and Jewish drinking; these, along with a few other ideal-type cultural patterns—Italian, Chinese, and "ascetic Protestant"—came to figure heavily in a small tradition of cultural theories of drinking in the American sociological literature of the late 1950s and 1960s. Contrasting the "integrated drinking customs" of Italians, Chinese, and Orthodox Jews with the "unintegrated drinking customs" of Irish-Americans and of the "United States American of the Northeast quarter of the nation—Protestant, middle-class, urban, white, from Anglo-Saxon background of three or more generations in this country," Ullman (1958) proposed that

> in any group or society in which the drinking customs, values, and sanctions—together with the attitudes of all segments of the group or society—are well established, known to and agreed upon by all, and are consistent with the rest of the culture, the rate of alcoholism will be low.

"Ullman's hypothesis" was related to and drew upon the "ambivalence" explanation of presumptively high U.S. alcoholism rates. The idea that the United States was a society uniquely ambivalent about its drinking, and that alcoholism rates would be reduced by integrating drinking more into everyday life, became the main intellectual underpinning for what became known as the "sociocultural model" of alcohol problems prevention in the late 1960s and early 1970s. In the mid-1970s, the tradition came under both methodological (Mäkelä 1975) and conceptual (Room 1976) critique. Meanwhile, Whitehead and his colleagues (Whitehead and Harvey 1974; Frankel and Whitehead 1981) adapted the Ullman hypothesis to reflect the new focus in the literature on level of consumption as a determinant of alcohol problems, synthesizing the two traditions in a restated (and complex) hypothesis. (For the contrast between the sociocultural and single-distribution traditions, see Harford et al. 1980.)

In the years after Ullman's paper, a related tradition of sociological literature differentiated between drinking cultures in terms of whether they had "proscriptive," "prescriptive," or "permissive" or "nonscriptive" norms on drinking (Mizruchi and Perrucci 1962; Larsen and Abu-Laban 1968; see Room 1975). While this literature drew its cases and comparisons primarily from North American ethnoreligious groups, Pittman (1967) drew on it and on the ambivalence tradition to propose that "it is possible to range all cultures on a continuum in reference to their attitudes about drinking." In this global synthesis, Pittman offered four such "cultural positions": the abstinent culture, the ambivalent culture, the permissive culture, and the overpermissive culture—the last of which, in his view, "is a polar type of cultural attitude which exists only in part, never in entirety." Pittman acknowledges that the general cultural position on drinking does not always determine behavior; while the "extensiveness of beverage use correlates with cultural type, it is not a perfect correlation."

Although these discussions frequently drew on international materials for their cross-cultural perspectives, the research questions and formulations tended to be strongly oriented to North America and for the most part were founded on a rather small base of empirical data. A wider perspective came into the modern English-language literature in the wake of Jellinek's international experience as a consultant to the World Health Organization in the early 1950s (Room 1984*b*). In a paper originally prepared in 1954, Jellinek (1962) pointed to the strong "cultural differences in the meaning of alcoholism" from one country to another. Beneath the differences in professional conceptions of alcoholism in different countries, Jellinek argued, lay cultural differences in the characteristic profile of alcohol problems. This distinction between different meanings of alcoholism in different countries became the underpinning of Jellinek's later Greek-letter typology of "the alcoholisms" (Jellinek 1960); Jellinek's beta, epsilon, and gamma types map fairly directly onto, respectively, the "inveterate drinker" of France, the explosive spree drinker of Finland, and the "Anglo-Saxon" pattern of the U.S. literature.

Sociological researchers have also paid attention to cultural variations in the profile of drinking problems, relating these differences to cultural differences in the social control of drinking. Comparing Finland and Denmark as the extremes of variation in the Nordic countries, Christie (1965) showed that "visible problems"—alcohol-related crime statistics—were higher in Finland, though the per-capita consumption of alcohol was lower and the temperance movement had traditionally been stronger there than in Denmark. Christie saw the causal arrow as pointing in both directions between social control and social disruption:

> The causal chain probably goes like this: A drinking culture with a large degree of highly visible, non-beneficial effects of alcohol consumption leads to a strict system of control which somewhat

> reduces total consumption, which again influences and most often reduces the visible problems. But also, the system of control influences visible problems—sometimes probably in the direction of increasing them.

Later discussions have pointed out that cirrhosis mortality was higher in Denmark, on the other hand, so that one might talk in terms of "problems of dryness" as against "problems of wetness." While a tradition of comparisons among Nordic countries has continued, similar analyses of regional variations within the U.S., between the "dryer" Southern and prairie states and the "wetter" remainder of the country, have shown substantially different profiles of problems in the two areas (Cahalan and Room 1974; Room 1982). More generally, it has been suggested that in seeking to control harmful consequences of drinking, cultures must make a strategic choice along a continuum between the integration of drinking into everyday life, on the one hand, and its enclaving and marginalization, on the other. In terms of the consumer availability of alcohol, the choice "is whether it is to be regarded as a consumer commodity like any other, or whether it is to be singled out from ordinary commerce for special treatment" (Mäkelä et al. 1981, pp. 95-96). In a broader European framework, it is clear that in the wine cultures of Southern Europe, where drinking is more integrated with meals and other aspects of daily life (Ahlström-Laakso 1976), health problems of heavy drinking are more prominent than problems of social disruption.

Another kind of cross-cultural study within a bounded frame is the explicitly comparative study undertaken by an ethnographer to compare the drinking practices and problems of two or three strategically chosen cultural groups. Although such studies are not common, they have often been especially illuminating. Examples would include Lemert's comparison (1979) of forms and pathology of drinking in three Polynesian societies, Levy and Kunitz' comparisons (1974) of Hopi and Navajo patterns, and the comparison by Graves and his colleagues (1982) of the social context of drinking and violence for Maoris, Pacific Islanders, and those of European ancestry in New Zealand pubs.

Hologeistic or Holocultural Studies

The pattern for alcohol studies in this tradition was set by Horton's pioneering analysis (1943). The units of analysis for Horton's and other studies in this tradition are tribal or village societies, and the raw material for the analysis is ethnographic material collected in the Human Relations Area

Files (New Haven, CN) or other archives. The actual analysis, however, is carried out in quantitative terms, using summary codes derived from the ethnographies of the society's position on the various dimensions used in the analysis.

Following the precedent set by Horton, studies in this tradition have used correlational techniques to test hypotheses about the predictors of a high rate of heavy drinking or drinking problems in a culture. Although the cultures included have usually been limited to tribal or village societies (McClelland et al.'s *The Drinking Man* [1972] is an exception), the results are often presumed to be applicable to industrial urban societies; in fact, Mäkelä (1979, p. 12) remarks, "from the viewpoint of intellectual history, the rival theories are all attempts to explain American alcoholism."

In recent years, the tradition has been critiqued from a number of perspectives. An obvious problem has been posed by the conflicting conclusions from analyses of essentially the same materials. By its analytical methods, the tradition takes little account of intracultural variation—a general problem with holocultural studies that becomes especially significant when deviant behaviors are being considered (Stull 1975). As Mäkelä notes, the tradition has tended to apply theories developed in terms of individual psychology at a whole-cultural level. The tradition thus poses in a particularly acute form the issue of appropriate levels of analysis, to which we shall return below.

Nevertheless, studies in the tradition have continued to appear (Frankel and Whitehead 1981; Naroll 1983). Whereas most earlier hologeistic studies had emphasized the relation of inebriety to generalized human needs—relief of anxiety, dependency conflict, need for power, etc.—Frankel and Whitehead's study, drawing on earlier work by Whitehead and Harvey (1974), turned the hologeistic material to the service of a debate in the literature over the relation between normative drinking patterns and rates of drinking-related problems. The correlations they found among drinking-related variables were generally higher than correlations in the earlier hologeistic analyses involving non-alcohol-specific variables. This result should be viewed, however, with some methodological caution about the meaningfulness of correlations in hologeistic analyses between variables within a single conceptual domain. While at the level of the recoded variables "approval of drunkenness" and "extent of alcohol-related damage" may appear quite conceptually separate, the underlying ethnographic description may not have made such clear distinctions. Further, differing generational biases in ethnographic attitudes toward drunkenness may have tended to inflate the correlations between drinking-related dimensions (Room, 1984*a*).

At a general level, the hologeistic analyses pose in an acute form the issue of causal inference from cross-sectional data. This is, of course, a general issue in social science research; analyses of cross-sectional data, however multivariately sophisticated, are now seen as rather weak evidence of causality. A strong cross-sectional relationship between two characteristics does not necessarily predict how a change in one will have an impact on the other; the best evidence for making such predictions comes from studies of change. Couched in the "ethnographic present," the hologeistic tradition assumes a timelessness in cultural arrangements, leaving no place for the substantial variations over time that have often occurred in the placement of a given culture on alcohol variables.

Cross-Cultural Diagnostic Studies

The aim of psychiatric nosologists, whether working within a U.S. frame of reference with the Diagnostic and Statistical Manual of the American Psychiatric Association or on the global scale with the International Classification of Diseases, has been to provide a matrix that would encompass all human psychopathology, and thus that would apply across all cultural boundaries. Such classifications operate within the general medical frame of viewing diseases as discrete Platonic entities. As a practical matter, existing classifications reflect the particular cultural matrix of their derivation—roughly speaking, hospital psychiatry in Germany, Britain and North America—and do not map easily onto the conditions and cultures of developing countries (Wig et al. 1985). As apparently new manifestations of psychopathology have been identified in non-European cultures, there has been considerable discussion of whether these "culture-bound syndromes" should be given new diagnostic categories of their own or whether they should be fitted into existing schemas (Simons and Hughes 1985). The term "culture-bound syndrome" has commonly been used to refer only to syndromes lying outside usual European cultural experience. But lately the issue has begun to be raised of whether some European disorders should not also be seen as "culture bound"; in particular, it has been proposed that elements of alcohol dependence as it is usually described might be viewed as culture bound (Room 1985*a*).

In the field of alcohol studies, there is a long tradition of regarding "alcoholism" or "dipsomania" or "inebriety" as a transculturally universal psychopathological entity. A major carrier of such understandings in the modern era has been Alcoholics Anonymous and the U.S. alcoholism movement, which have stressed a view of alcoholism as a disease that may strike anyone, irrespective of category or culture. The assumption that "alcoholism" meant the same thing anywhere is also widespread in the scholarly literature. Certainly Jellinek subscribed to this assumption in the earlier stages of his work; Jellinek's famous discussion (1952) of "phases of alcohol addiction," although originally printed as an annex to a WHO report, did not recognize any cross-cultural variation in alcohol addiction. As we have noted, however, Jellinek's later work (1960) recognized that different national traditions meant very different things by the common term "alcoholism". His classification of "the alcoholisms" into a series of Greek-letter "species," based in part on predominant symptomatologies in different European and North American countries, can be seen as a nosological reclassification in terms of a series of culture-bound syndromes.

Against this, the WHO publication on the alcohol dependence syndrome (Edwards et al. 1977, p. 10), while recognizing that the scope and shape of the broader sweep of "alcohol-related disabilities" would be culturally determined, specifically rejected the idea that alcohol dependence was culturally specific or inherently culturally differentiated: "observed differences" from one culture to another "could be better interpreted as culturally, environmentally or personally patterned manifestations of the fundamental alcohol-dependence syndrome." This proposition has set the agenda for a nascent tradition of studies aiming to define a common cross-cultural core to alcohol dependence.

Approaches to this question so far have been diverse and the results mixed. As Ritson and his colleagues found in a earlier cross-cultural comparison of drinking-history symptoms (briefly described in Anonymous 1972), the symptomatology manifested in a particular clinical population reflects not only the cultural patterning of heavy drinking and dependence but also the societal arrangements for responding to drinking problems. In a given culture, the symptomatology in a detoxification center sample may look rather different from the symptomatology among those attending a primary mental health care clinic. In this circumstance, it is difficult to gauge the cross-cultural commonality of behavioral and mental symptoms.

It is clear by now that off-the-shelf diagnostic tests designed for general use in the United States or a European country do not fare well when used in very different cultural circumstances—a finding that will not surprise anthropologists (e.g., Levy and Kunitz 1974; Leland 1976). Researchers found themselves unwelcome in an Alaskan Eskimo village after they reported to the U.S. mass media that three-quarters of the village's adult population had tested as "probable alcoholics" (Klausner and Foulks 1982). Applying the Munich Alcoholism Test in Germany, Spain, and Ecuador, Gorenc et al. (1984) found 5 out of 31 criteria that were "relatively free of cultural differences" by their criteria—but added that none of these items had passed all five of the filters used to screen out items on the original German study. The recent WHO project to develop a cross-culturally suitable screening instrument for alcohol dependence was similarly able to drastically reduce the items from the initial instrument after examining the items' clustering, relation to heavy drinking, and manifestations in samples of identified alcoholics in samples from six nations (Saunders and Aasland 1987). On the other hand, comparing clinical samples from a narrower cultural range—the United States and France—Babor et al. (unpublished) came to the conclusion that "a reasonably convincing case could be made for the universality of a cluster of symptoms and behaviors engendered by repeated alcohol ingestion."

After a detailed analysis of alcohol dependence symptoms in general population samples from the WHO Study of Community Response to Alcohol-Related Problems carried out in Mexico, Zambia, Scotland, and the United States, Roizen (unpublished) could come to no clear conclusion on whether the "data suggest a 'universal' alcohol dependence syndrome": the answer depended on what one took as the criterion for answering that question. He went on to suggest that perhaps the

> symptoms do not reflect an underlying dependence phenomenon but, rather more simply, *the consequences of intoxication*. They stand in relation to the phenomenon they indicate not so much as the symptoms of diabetes stand to it but rather as the symptoms of, say, starvation stand to it. Starvation certainly brings with it "symptoms" and these may show a great deal of consistency both from person to person and over time. But they tell us relatively little about the origin of the condition: we cannot tell from the symptoms alone, for example, whether a person starves because of famine in his homeland or because he is on a political hunger strike.

Unlike the other research traditions we have considered so far, the tradition of cross-cultural diagnostic studies seeks to eliminate rather than to study cross-cultural variation. This aim poses difficult questions, both conceptually and methodologically, which the literature has not yet fully addressed and solved.

Within-Country Ethnic Comparisons in Population Surveys

It has long been recognized that multiethnic societies contain within them enormous diversities in cultural patterns of drinking (for the United States, see references in Room 1968). General-population surveys of drinking practices and problems in the United States have long paid attention to differences among white ethnic groups as well by racial groups. In general, studies using simple self-definitions of ethnicity (such as "what country did most of your ancestors come from?") have found systematic differences in patterns of drinking and in rates of drinking problems among U.S. ethnicities, with drinking problem rates generally lower among those of southern European and of Asian ancestry than among those of northern or eastern European ancestry, among Irish Americans, and among blacks and Latin Americans. (For instance, see Knupfer 1967 and Cahalan and Room 1974, pp. 101, 203.)

More recently, it has been recognized that there may be considerable change over time in the patterns of drinking of an ethnicity within a multiethnic society. Herd's work (1985), for instance, has documented a substantial shift during the 20th century from relatively low to relatively high rates of alcohol-related problems in the American black population. Furthermore, it is increasingly recognized that ethnicity in multiethnic societies is often a matter of choice as well as of assignment, particularly for those with multiple ancestries. An ethnic identity may be sought as a mark of distinction, and adopting a particular drinking pattern may be a symbol of ethnic identification. In this perspective, differences in drinking patterns often help to define cultural boundaries within a society; indeed, ethnic drinking patterns may be in part a performance staged for an audience of other ethnicities (Lurie 1971; Stivers 1976). In this reconceptualization of the meaning of ethnicity in a multicultural society, ethnic identity and culture are no longer seen simply as a reflection of premigration culture that fades gradually with acculturation, but rather as constructed and reconstructed from old and new cultural materials in a changing cultural situation. In these new perspectives, the relation of alcohol and culture is seen

> in terms of flux and fluidity as well as stasis and inertia, in terms of intercultural conflict, accommodation, and antithesis, as well as of

> the immanent unfolding of a culture, and in terms of self-conscious symbolization and ideology, as well as of an unconscious cultural reproduction or reactions to material circumstances.
>
> (Room 1985*b*)

This new perspective informs much new ethnographic work on alcohol and ethnicity in North America (Bennett and Ames 1985) and is increasingly entering into the analysis of drinking surveys in the general U.S. population, as will be apparent from other contributions in this monograph.

Surveys of a multiethnic population as a whole will of course yield representative samples of the ethnic groups that compose the population, but cross-ethnic analysis of such data is often limited by the small sizes of the subsamples. Researchers have coped with this problem in various ways: by abandoning strict probability principles (Knupfer and Room 1967; Greeley et al. 1980), by aggregating data from different samples together (Caetano 1984), or, as in other material in this monograph, by oversampling or collecting special samples of the ethnicities to be studied (see also Jessor et al. 1968). While occasional tables differentiating drinking patterns by ethnoreligious groups can be found in drinking survey reports from Britain, Australia, New Zealand, and other countries with some ethnic diversity, there are only a few reports from outside the United States with relatively full data on ethnic differences. (For Switzerland, see Wüthrich and Hausheer 1977 and Müller 1981; for South Africa, see Venter 1964, 1965; Miles 1964; and Venter and Goosen 1966; for Australia, see Sargent 1973.)

Cross-National Surveys

The studies reported in this monograph make up a substantial proportion of the cross-national surveys on drinking that have so far been conducted. Previous cross-national comparisons have often resulted from accretion, where a questionnaire used in one country has been adopted for use in another. (See, for example, Encel et al. 1972.) The broadest series of cross-nationally comparable surveys are undoubtedly those carried out by ANSVAR, a Swedish-based insurance company, which has asked about abstention, frequency of drinking, and some lifestyle items in a number of countries (Lindgren 1973; Armyr, unpublished). The most intensive tradition of cross-national collaborative surveys is among the Nordic countries. Under the auspices of a continuing joint research body, comparative studies of youth and adult populations, concentrating on drinking patterns and attitudes, have been carried out for over 20 years. (See, for example, Bruun and Hauge 1963; Mäkelä 1984).

A substantial obstacle to cross-national comparability has been the evolution of different national traditions of asking about drinking patterns, problems, and attitudes. While the advantages of adopting comparable measures have often been noted (Brun-Gulbrandsen 1973), attaining comparability has proved difficult. To measure trends in their national population, researchers may be impelled to repeat the form of questions used in previous surveys. Furthermore, where typical drinking patterns vary widely, the same questions or summary measures may not adequately describe the different national patterns. Thus the WHO study of Community Response to Alcohol-Related Problems found that collecting a record of the last week's drinking—the standard procedure for measuring drinking patterns in Scotland—failed to capture a common drinking pattern in Mexico, where many who drink quite large amounts at a time drink only a few times a year.

Despite these difficulties, there is by now a substantial amount of cross-nationally comparable data available. Although national research funding tends to constrain researchers to analyses within their own society, much could be gained from more intensive analyses of existing cross-national data sets.

A relatively new departure in cross-national studies, well represented in the papers in this volume, is the combined cross-national/cross-ethnic study, including an ethnic migrant group, the "old country," and if possible also a comparison group from the "new" country. While earlier examples of such studies can be found (see Lolli et al. 1958 on Italians and Italian-Americans), the importance of such studies was underlined by Stivers' finding (1976) that drinking among Irish-Americans differed substantially from drinking among the Irish. O'Connor's study (1978) of drinking among Irish, Anglo-Irish, and English youth, which found more heavy drinking among children of Irish immigrants in England than among either English or Irish youths, is a well-developed example of a combined cross-national/cross-ethnic design.

Cross-National Trend Comparisons

International compilations of alcohol statistics have a lengthy tradition, and a number of such compendia are currently available. Analyses that aim to make sense of such data are not rare; we cited above, for instance, a paper by Christie (1965) that makes use of Scandinavian alcohol statistics. In recent years, however, researchers from a number of perspectives have grown impatient with cross-sectional comparisons of culturally relevant statistics; analyses "of cross-sectional comparisons or correlations . . . though often thought-provoking, can hardly be regarded as solid evidence for the existence of causal relationships" (Mäkelä et al. 1981, p. 93). To understand change, researchers have concluded, we must study change.

As Hill (1984) noted, to track change in a single culture to some extent "holds culture constant," allowing us to examine the effect of other factors.

> Tracking the changes in a given institution or activity through time in a single society offers an excellent test for any synchronic analysis made of that institution or activity. As the situation and variables change through time, do the hypothesized relationships hold? Because the researcher is dealing with a single society, more variables are held constant than would be the case if he compared the "same" institution in two different societies.

By the same token, tracking changes in parallel in different societies further opens up the analytical opportunities, allowing us to study the interplay between cultural and other factors in societal changes. It was on this premise that the researchers collaborating on the International Study of Alcohol Control Experiences (ISACE) set out to examine trends in alcohol control, consumption, and consequences, and their interplay, in seven countries over the period 1950 to 1980 (Mäkelä et al. 1981). We may use some findings of this study to exemplify what is possible with such a cross-national trend comparison study. The ISACE study found that the interplay of factors was not simple. While all the countries studied had experienced a rise in alcohol consumption, and in at least some alcohol-related problem statistics, cultural differences in the expression of problems remained strong. On the other hand, in the societal responses to alcohol problems—specifically, in the growth of alcohol treatment as a response—the societies seemed to have much in common, leading the authors to remark that "common solutions were adopted for very different problems" (p. 64). The authors suggested that there had been a diffusion among professionals of the idea of treatment for alcoholism, but that the societies had each found the idea attractive as a "kind of cultural alibi for the normalization of drinking and relaxation of controls" that was occurring in each society (p. 65).

Some Issues in Cross-Cultural Analysis

Units and Levels of Analysis

There are of course a number of difficulties of definition involved in calling a study or analysis "cross-cultural." In the abstract, the meaning of the terms seems clear: it means a study that compares two or more cultures. For what constitutes a "culture," we can draw on the lengthy tradition of anthropological definition and exegesis. But in actual application in the modern world, identifying and setting the boundaries of cultural entitities is not so clear. Even in the traditional anthropological territory of tribal and village cultures, what constitutes a cultural entity is often a thorny problem. In the modern world of the nation-state and of multicultural societies, the answer is yet more complicated.

In untangling an answer, it is useful to consider that most of us live in a set of overlapping and nested cultural entities. There is the nation-state, which commonly has defined as part of its task the creation, even if out of whole cloth, of a common national discourse and culture. There is our primary language affiliation, which may be to a cultural community stretching well beyond the nation-state (e.g., French), or may be entirely enclosed within it (e.g., Croatian). In multicultural nations, most citizens also feel some affiliation with one or more ethnoreligious groups, defined primarily through their ancestry. This by no means exhausts the list of significant cultural entities with which each of us may be affiliated; when some anthropologists talk of "family culture," for instance, they are thinking of the aspects of family life that form a microcultural entity.

We also commonly are a part of a number of other aggregations, which may or may not constitute cultural entities: for instance, in the United States, a State, a census tract, a health insurance plan group. One of the common difficulties in a cultural analysis of drinking practices and problems is that variables in the analysis belong to differing levels of aggregation. In the WHO study of Community Response to Alcohol-Related Problems, for instance, participants spent a great deal of time discussing what constituted a "community," with respect both to informal community responses and to the idea of community-level social and health agencies. For some aspects of the study, the appropriate answer would be a hospital district, for others one or two blocks in a neighborhood, for still others a town or city. To make matters worse, there was often variation between one national site and another in the level of aggregation appropriate for a particular aspect—variation that was also inextricably part of the data of the study. For instance, a mental hospital's clientele in Scotland was drawn from a much more limited and homogeneous population than a mental hospital's clientele in Zambia.

An explicit consideration of the levels of aggregation of the variables involved is an important first step in cross-cultural research. Data in the study need to be drawn from levels of aggregation appropriate to the issues that are to be explored or tested in the study. As noted above, much of the criticism of the hologeistic tradition has centered on the lack of fit between the levels of aggregation implied by the hypotheses put forward and the levels of the data used to test them—in that the studies did not allow for individual variation within a culture, and in that many of the hypotheses concerned concepts that had been developed in the context of the individual's mental states, but which were now applied to characterizations of cultural groups.

Where it is possible, cross-cultural analyses will often benefit from using variables from two or more levels of aggregation. A cultural analysis that takes account of individual variation already, of course, includes variables from two levels—the individual level and the cultural level. "Intuitively, at least," Allardt has remarked, such "structural and contextual analysis" appears to be "more fruitful" than either group or individual analysis taken alone (Allardt 1969; see Room 1980).

The Limits of Universalism and Relativism

In an interesting paper, Schweder and Bourne (1984, p. 98) lay out three "deeply entrenched models of anthropological interpretation: *universalism*, *evolutionism*, and *relativism*."

> Universalists are committed to the view that intellectual diversity is more apparent than real, that exotic idea systems, alien at first blush, are really more like our own than they initially appear.
>
> Evolutionists are committed to the view that alien idea systems not only are truly different from our own, but are different in a special way; viz., other people's systems of ideas are really incipient and less adequate stages in the development of our own understandings.

> Relativists, in contrast, are committed to the view that alien idea systems, while fundamentally different from our own, display an internal coherency which, on the one hand, can be understood but, on the other hand, cannot be judged.

Let us set aside for the moment the evolutionist model and focus on relativism and universalism. These themes are certainly prominent in global syntheses on alcohol, often presented in an "on the one hand . . . on the other hand" format. Mandelbaum's paper, "Alcohol and Culture," for instance, first notes the diversity of cultural perspectives on drinking and then proceeds to emphasize the existence of commonalities in alcohol use—apparently without exceptions—across cultures. The latter point is made in part by negation:

> If we should find a people in which women must drink more than men, in which drinking must be done alone or in the company of one's mentors or dependents, or in which the upholders of scripture (whether theological or political) are expected to drink more heavily than do others, we should know that we have encountered a society basically different from others so far known.
>
> (Mandelbaum 1979, p. 27)

Heath's most comprehensive discussion of theoretical perspectives in the anthropological literature notes that "among professional anthropologists . . . —with occasional important exceptions—general propositions are rarely offered and perhaps even more rarely tested, except in the casual manner of mentioning the fact when an individual case does not conform to a widely known hypothesis" (Heath 1975, p. 50). Heath himself tends to emphasize diversities more than commonalities. His list of cross-cultural commonalities is relatively short and general: that drinking "is normally a social act," and that drinking, the effects of drinking, and drunken behavior are all shaped by "cultural values, attitudes, and conceptions of reality" (p. 56). Beyond this, Heath's own cross-cultural use of data has tended to be in the relativist style—as he characterizes it, "providing a critical test for conceptions of reality" by showing that ethnocentric assumptions about "human nature" do not apply in other cultures (p. 20).

In the concluding chapter of his edited reader, *Beliefs, Behaviors, and Alcoholic Beverages*, Marshall (1979) offers a series of 16 cross-cultural generalizations about drinking. The list is primarily in the universalistic mode; three-quarters of the generalizations propose cultural universals or near-universals. Thus, "beverage alcohol is used for festive, ceremonial, or ritual celebrations the world over"; "alcoholic beverages are the drug of choice for a majority of persons in any society, even if alternative drug substances are available"; permissible drunken behavior, however it may be defined, is always "within limits"; "socially disruptive drinking occurs only in secular settings"; "peoples who lacked alcoholic beverages aboriginally borrowed styles of drunken comportment" from those who introduced the alcoholic beverages; and "once alcoholic beverages have become available in a society, attempts to establish legal prohibition have never proven completely successful." Other propositions concern near-universals at the cultural level, though in some cases delineating intracultural variation: "beverage alcohol is usually not a problem in society unless and until it is defined as such"; "beverage alcohol usually is defined as a social facilitator . . . and this belief may persist despite considerable evidence to the contrary"; "typically, alcoholic beverages are used more by males than by females and more by young adults than by preadolescents or older persons"; and "males' drunken comportment usually is more exaggerated and potentially more explosive than that of females, regardless of relative ethanol consumption."

Just four of Marshall's propositions are "if-then" statements, concerned with the interplay between one dimension of variation in cultures and another:

> When members of a society have had sufficient time to develop a widely shared set of beliefs and values pertaining to drinking and drunkenness, the consequences of alcohol consumption are usually not disruptive for most persons in that society. On the other hand, where beverage alcohol has been introduced within the past century and such a set of beliefs and values has not developed completely, social—and sometimes physiological—problems with ethanol commonly result.
>
> Where opportunities for group or community recreation are few and alcoholic beverages are available, alcohol consumption will become a major form of recreational activity in a community ("the boredom rule").
>
> The drinking of alcoholic beverages occurs usually with friends of relatives and not among strangers. Where drinking among strangers does take place, violence is much more likely to erupt.
>
> When alcohol beverages are defined culturally as a food and/or a medicine, drunkenness seldom is disruptive or antisocial.

In general, it seems to me that the path forward in cross-cultural studies is not by searching for further universals, but rather by developing and testing such if-then statements. By definition, a cross-cultural universal cannot explain cultural differences, and neither can it explain cultural change. For such explanations, if-then statements are needed.

Setting Boundaries of Comparability

Behind Schweder and Bourne's distinction between universalists and relativists lies a deep unity: the relativist position, while concerned to emphasize differences in social arrangements, nevertheless assumes that the internal logic of alien idea systems "can be understood" across cultural boundaries. This necessarily involves an assumption of some substratum of mental processes held in common between those being described and those who are to understand across a cultural gap. The relativist and universalist positions therefore can be seen as different points along an assumptive continuum concerning what understandings and mental processes humans hold in common.

Most cross-cultural analyses involve unexamined assumptions concerning this continuum. Non-economists tend to be uncomfortably aware of the assumptions concerning "homo economicus" involved in most economic analysis. As we have noted, the inclination of many psychiatric nosologists is toward assuming a kind of psychopathological unity of humankind. Hologeistic alcohol studies can and have been critiqued for the degree to which they assume a unity of mental processes and functions across all cultures—for instance, in Horton's assertion that drinking is primarily for the relief of anxiety. More fundamentally, by analyzing data from tribal and village societies with the aim of contributing to an understanding of cultural processes in large and complex societies, hologeistic studies commit themselves to the idea that processes and interactions are the same in one kind of society as in the other.

In my view, cross-cultural analysts should routinely examine and specify the level of assumption of human unity that their analysis requires. Such a reexamination may identify boundaries within which the analysis can be seen as applicable and beyond which it does not apply. Let us consider an example. MacAndrew and Edgerton's analysis (1969) argues that Horton's assumption that drunkenness always brings a threat of violence, as a commonality across humankind, should be abandoned. There are cultures in which drinking has a strong cultural association with violence, and others in which it does not. In this circumstance, it would be wise to limit the scope of a theory that focuses on the social control of violence as a main aim of controls on alcohol availability to cultures where violence and drinking are linked.

The idea that there are boundaries or discontinuities across which commonalities do not apply bears some relation to Schweder and Bourne's third model of interpretation, evolutionism. But to think in terms of bounded levels or categories in which different relations apply does not necessarily invoke the added assumptions of an evolutionist perspective—that passage between levels or categories is in only one direction, or that movement in such a direction must be construed as progress.

We can identify a number of dimensions relevant to the issue of the generalizability of cross-cultural analyses in alcohol studies. The dimension of violence associated with drunkenness has already been mentioned. So has the boundary between relatively isolated village and tribal societies and large-scale complex societies. Matters of definition complicate this issue, but there are clear differences between large-scale and small-scale societies, for instance in terms of means of social control and the handling of problems.

Recently, the importance of material conditions of alcohol production and distribution in societal drinking patterns has been reemphasized. The routine availability of alcohol in a market-oriented cash economy, tied in to world transportation networks, creates a very different cultural situation from that in an isolated village where the women prepare the beer from any surplus grain, while the men drink it. What we know about the distribution of consumption of alcohol in the population is largely confined to experience with cash economies in which alcohol is a commodity and there is ready transportation.

The question of whether aspects of alcohol addiction should be regarded as a culture-bound syndrome reflects Foucault's analysis of the shift in consciousness in Europe at the beginning of the 18th century, and Levine's analysis (1978) of the related shift in perceptions and beliefs about alcohol, at least in the United States. The existence of a cultural imperative for an internalized individual control of behavior may thus form a horizon for discussions of the correlates of addiction.

Last, whether a culture has an active history of temperance agitation and concern may set a boundary in terms of cultural perceptions and attributions about alcohol. The residual legatee of such historic concerns in the modern era is often a substantial research program, while cultures without such historic concerns often support little research. Since most research is therefore done in and on cultures with a temperance history, much of what we think we know in alcohol studies may only be applicable to such cultures.

The Promise of Cross-Cultural Research in Alcohol

In suggesting horizons of comparability for some lines of research, we have identified a few of the potentially fruitful paths for future work in cross-cultural research in alcohol studies. Cross-cultural work is needed to establish the generalizability of such clinical constructs as the alcohol dependence syndrome. Comparative studies of attributions and expectations concerning alcohol would add a new dimension of depth to a social psychological literature too often based on samples of U.S. college students. Comparisons of time-series analyses of alcohol consumption and alcohol problems in different national populations will yield clues about different causal connections between drinking and social and health problems in different cultural circumstances. Collaborative analysis of longitudinal data sets in different societies will help disentangle the relative contributions of maturation, cohort, and historical factors in the patterning of drinking in the life course. Comparative analysis of survey data on drinking patterns, problems and attitudes by gender, age, and status can tell us much about the implications for a society of variations in the social locations of drinking. Cross-cultural ethnographic studies can yield new insights on the links between drinking and violence, both in the family and in the streets.

These are but a few of the agendas that are now open for analysis in cross-cultural research. Too often, in alcohol studies as in other fields, "cultural differences" have been regarded as outside the frame of explanation. They are invoked as a fall-back interpretation after the analysis is finished, rather than being included in the hypotheses to be subjected to testing. We are now in a position to include cultural variables in the explanatory scheme. A fuller understanding of cross-cultural variation in drinking practices and problems will give us new tools in the prevention and treatment of alcohol problems.

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WHO Project on Community Response to Alcohol-Related Problems[1]

Irving Rootman[2]

Overview of WHO Project

The WHO project on Community Response to Alcohol-Related Problems[3] was a collaborative action research project carried out in Mexico, Scotland, and Zambia from 1976 to 1983 under the auspices of the World Health Organization, with the aid of core-support funding from the National Institute on Alcohol Abuse and Alcoholism (NIAAA). The selection of these countries reflected a number of research and policy considerations—not the least of which was a willingness and enthusiasm on the part of the host countries to fund and carry out such a project and to respond to their own alcohol problems. But they were also selected to cover a wide range of cultural situations and included a developed country, a developing country, and a country in the process of rapid social change.

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[1] The work on which this paper is based involved the collaboration and financial support of the following bodies: the Government of Zambia, the Government of Mexico, the Government of the United Kingdom, the World Health Organization, and the U.S. National Institute on Alcohol Abuse and Alcoholism. Financial support from NIAAA was provided under contracts nos. ADM 281-76-0028 and ADM 281-79-0018.

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[3] D. Hawks managed the Community Response project from 1977 to 1979 and I. Rootman did so from 1979 to 1984. The principal investigators were G. Calderon Narvaez, C. Campillo-Serrano, A. Haworth, M. Mawanalushi, B. Ritson, and R. Serpell. Project coordinators were J. Moser and J. Ording.

As with any large collaborative project, the Community Response project melded together a variety of purposes. For that matter, the emphases shifted somewhat as it developed. From the perspective of WHO, the project offered the opportunity to expand the WHO program on alcohol problems, to tilt the program significantly toward the developing world; to provide a model for action-oriented research and indeed for public health action on the basis of research; and to serve as a basis for the diffusion of techniques and expertise back and forth between the collaborating countries and eventually to neighboring and other countries. From the standpoint of NIAAA, there was also an interest in expanding WHO's program on alcohol problems and a commitment to developing knowledge and models of action research in an international frame that might shed light on the situation and possibilities for action in the United States. Finally, from the viewpoint of the collaborating countries, the project offered the prospect of developing or extending their bases of knowledge and expertise in understanding and dealing with their own alcohol-related problems.

In spite of this diversity, however, all participants agreed that the primary long-term aim of the project was to improve responses to alcohol-related problems in the participating countries. This aim governed much of what happened during the 7 years of the project's official life. A number of other specific objectives in support of this aim were agreed on. They were—

- to describe and measure the extent and nature of drinking patterns and alcohol-related problems
- to describe and measure responses to such problems
- to explore factors contributing to alcohol-related problems and responses
- to assess the strengths and deficiencies of existing responses
- to formulate proposals for desirable changes to existing responses and methods of achieving these

- to promote interest in the development of policies focused on the prevention and alleviation of alcohol-related problems

- to study the process of implementation of community and national actions that respond to alcohol problems in the countries

In order to fulfill the aim and objectives of the project, several interconnected approaches were used in selected rural and urban communities in each country. These included the collation of existing background information; general population surveys; surveys of workers in community agencies dealing with alcohol problems, including hospitals, social welfare agencies, and police stations; studies of clients of those agencies; observational studies of drinking places and events; dissemination of results; and finally, monitoring action initiatives. The various elements of the project were collaboratively designed and coordinated by means of meetings held every 6 months, which drew together the research principals in charge of the projects in the participating countries.

During these meetings, considerable effort was devoted to maintaining comparable data collection methods. Frequently, even where the collective decision was to leave collaborators free to deviate from a common plan to take into account local cultural differences, they opted instead to follow a common path to preserve data comparability. Nevertheless, it proved much more difficult to maintain comparability in some approaches than in others.

In the end, the general population survey approach proved to be the most comparable and hence the most useful for cross-cultural analyses. This survey used a relatively long interview schedule that inquired into four areas of drinking: the respondent's drinking patterns and practices, the cultural definition of drinking, drinking-related problems, and modes of community response to alcohol-related problems. This schedule was assembled by drawing questions from other questionnaires used in the field, modifying them, and adding questions of interest to the collaborators.

In all, some 992 personal interviews were conducted in Scotland, 555 in Mexico, and 988 in Zambia. In addition, 481 interviews using a similar interview schedule were carried out in Contra Costa County in California. Sample sizes refer to those who were 18 and over at the time of the interview.

Cross-Cultural Analyses

In spite of the fact that considerable effort was made to maintain comparability, especially in the general population survey, cross-cultural analyses were quite controversial. It was one of the few issues that led to strains among the participants. Some argued that it was almost antithetical to the purposes of the project and at best diversionary. Others argued that such analyses were questionable on methodological grounds because of a lack of strict standardization of the instruments, nonrepresentative samples, and the different circumstances under which data were obtained. On the other hand, many of the participants felt that to ignore the cross-cultural potential of the data would be to ignore an extremely rich source of information that could enhance our knowledge about alcohol problems and lead to valuable insights regarding appropriate courses of action.

The net result of this controversy was that cross-cultural analyses of the data played a relatively small part in the three official reports on the project (Ritson 1985; Rootman and Moser 1984, 1985).

Nevertheless, some effort was devoted to carrying out cross-cultural analyses during the official lifetime of the project, and this resulted in an unpublished report (Roizen 1983, unpublished). In addition, following the project's official conclusion, several participants have collaborated on further analyses and are in the process of writing a book based on these analyses.

The remainder of this paper discusses the lessons learned from the cross-cultural analyses that may be of value to others undertaking similar work.

Lessons Learned

The first lesson that we learned from doing cross-cultural analyses of the data collected in the Community Response project is that such analyses are extremely difficult. In addition to the normal problems of research, cross-cultural research poses such problems as maintaining comparability in data collection and analyses; avoiding invidious comparisons, i.e., adjectival comparisons taken out of context; breaking out of one's own cultural mind set; working with people having other cultural perspectives; physical distance; obtaining resources and support; deciding on the most appropriate level of analyses; obtaining an in-depth understanding of the culture; and a lack of theoretical development. While the project cannot claim to have resolved all of these difficulties, it made some contribution to the resolution of each.

For instance, on the problem of comparability, by using a collectively developed protocol and data collection instruments, it was possible to reduce variability in approaches to data collection. Similarly, by establishing common coding procedures, it was possible to prepare data in ways that made them amenable to common analyses. Despite the efforts to promote comparability, collaborators recognized that it was inevitable that the data would never be completely comparable. The difficulty of translating the instruments into different languages alone ensured that this would be the case! Nevertheless, the use of common procedures helped considerably.

With regard to avoiding invidious comparisons, the investigators were acutely aware of the need to do so. They took every precaution possible, carefully scrutinizing their written and oral conclusions to avoid doing so. Despite this, some invidious comparisons may have been made. However, sensitivity to the problem ensured that it did not happen often and certainly not in published form.

Breaking out of one's cultural mind set is not easy at best. However, the project operated in such a way to ensure that only the most obtuse person would not, at least to some degree. The fact that the participants met in the different cultural settings over the course of the project was enormously helpful in this regard. So, too, was exposure to descriptions of the different settings through the exchange of reports and information. In addition, the corss-cultural comparisons themselves brought unexpected striking similarities and differences to the collaborators' attention and challenged their cultural preconceptions.

At first, working with people with differing cultural perspectives was rather difficult. However, it became less so as people continued to work with one another. Perhaps most importantly, the development of friendships over the course of the project helped to reduce the cultural barriers between participants. By the end of the project, very few, if any, misunderstandings occurred that were due to cultural factors.

The problem of physical distances was resolved in part by regular meetings of participants. In addition, regular visits of the project managers to the study countries helped to reduce the difficulties of collaboration at a distance. So did monthly reports to all collaborators from the project managers and direct correspondence between collaborators.

Obtaining resources and support was a continual problem. This was especially true in Mexico and Zambia. Nevertheless, collaborators found ways to maximize their resources and to help one another. The latter was particularly true in relation to the cross-cultural analyses in which the Alcohol Research Group (ARG) at Berkeley came to play a focal role. The ARG produced tabulations, analyses, and interpretations that were fed back to the collaborators for their use and reactions. This helped to ensure that cross-cultural issues remained on an otherwise crowded research and action agenda.

There was much discussion in the project of the appropriate level at which to conduct the cross-cultural analysis. That is, was the appropriate level the individual, the community, or the country as a whole, or still other social groupings? In the end, analyses were conducted at all of these levels, though there was considerable uneasiness about generalizing to the country level and considerable effort was devoted to avoid doing so. In general, however, it was the consensus of the participants that whatever level is chosen, it should be explicitly indicated and the strengths and limitations of the data at that level underscored.

Achieving an in-depth understanding of all the cultures covered in the project was certainly not possible for all participants. However, the country investigators became much more familiar than they had been as a result of carrying out a variety of studies in the project communities, talking to knowledgeable informants, and studying the relevant literature.

Finally, the lack of theoretical development proved to be an unresolvable problem. While there was some anthropological and other theoretical literature (e.g., on age and gender stratification) that was pertinent, none of it provided an entirely satisfactory theoretical framework. The collaborators concluded that this was due to the fact that researchers in the past had not confronted the same sort of data or theoretical problems posed by the data in the Community Response project. The project itself may make a contribution to the theoretical development required.

In addition to learning something of the problems of cross-cultural analyses and some possible solutions, the collaborators also felt that they learned something about alcohol use and use-related problems as a result of their cross-cultural analyses. A few of the high points of what was learned will be mentioned briefly.

At a basic descriptive level, there were both striking differences and similarities between countries in their drinking patterns, cultural definitions of drinking, drinking problems, and in their responses to such problems.

With regard to differences, for example, it was found that younger people in Scotland were more likely to drink frequently and in larger amounts than their older counterparts—the opposite of what was found in the other two countries. Similarly, age seemed to be more important in determining the acceptability of drinking and getting high in the Zambian samples, whereas gender was the more important factor in Mexico. In the Scottish samples, alcohol problem rates were highest among young males, whereas among Mexican males, rates appeared to increase with age. Among Zambian males, age seemed to have little impact.

As for similarities, in all samples, men were more likely than women to report that they drank frequently and got drunk. Males were also more tolerant of drunkenness and had more often experienced problems associated with their drinking. There was little difference in attitudes toward treatment by men and women in all samples. Sociability and celebration were generally endorsed reasons for drinking, and cost, health, and work consequences were most often cited as reasons for not drinking or being careful about drinking. Norms regarding drinking behavior were most restrictive for women and young people in all settings, and there was less tolerance for drunkenness than for drinking. There was also less of a difference in the ways men and women viewed alcohol than in their drinking practices. This is suggestive of the well-known discontinuity between attitudes and behavior. In all three countries, there appeared to be substantial involvement of alcohol in incidents that came to the attention of the police. Tolerance for drinking and drunkenness seemed to be greatest at parties, in bars, or at home. The least tolerance for drinking was shown in the driving situation.

At a more analytical level, one of the things that was learned was that demographic variables have different values in predicting alcohol-related problems in different cultural settings. In particular, it was found that in both Scotland and Mexico, two demographic characteristics—sex and age in Scotland, sex and education in Mexico—were reasonably powerful in predicting which individual in the community will report personal or social problems related to drinking. In Zambia, however, reported problems were much more evenly distributed among demographic segments, and knowledge of demographic characteristics did not improve prediction of drinking problems substantially above chance.

Similarly, in an analysis of the data focusing on the alcohol dependence syndrome, it was concluded that the symptoms do not reflect an underlying dependence phenomenon but rather, more simply, consequences of intoxication. It was suggested that if this is the case, the surrounding cultural context becomes the important variable in determining how alcohol problems are expressed.

As a final example, a recent analysis of the data (Room, unpublished) found little or no empirical relationship between attitudes concerning community response on the one hand, and attitudes and norms on drunkenness and abstention and personal drinking experiences on the other in the samples from the three countries and in a sample from the United States. It is suggested that this may be a cultural universal—it is certainly a hypothesis worth exploring using data from other cultural settings.

Clearly, the cross-cultural analyses carried out as part of the WHO Community Response project have taught us a great deal about cross-cultural analyses and about alcohol use and the problems that ensue. It is also clear that the project has established a foundation on which further cross-cultural alcohol research can build. In fact, as the papers in this volume indicate, the project has already stimulated such work.

In addition to the cross-cultural dimension, the project has also stimulated considerable other work in the alcohol field. The best example is a series of projects being carried out in Europe under the auspices of the European office of WHO as described in a paper by Bruce Ritson (unpublished). While none of these projects replicate the WHO Community Response project in its entirety, they all draw elements from it.

It is clear that the Community Response project will have a long-term influence on the ways in which we see and respond to alcohol-related problems. We hope it will have a similar influence on how we study alcohol problems in a cross-cultural context.

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A Far Eastern Perspective

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Drinking Patterns, Problems, and Treatment in Japan

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This research study is about drinking patterns and the effects of alcohol consumption on health in Japan. Individual interviews with Japanese who live in four different areas of Japan were conducted during the 3-month period between September and November 1984. Careful planning and monitoring were involved in conducting this study. A WHO questionnaire designed to assess alcohol consumption patterns was modified for use in this study by both U.S. and Japanese scientists representing the National Institute on Alcohol Abuse and Alcoholism and the National Institute on Alcoholism in their respective countries.

The questionnaire consisted of 59 items that obtained information about demography, drinking patterns, drinking problems, cultural understanding of alcoholism, the flushing response to drinking, history of physical illness, and smoking history. A total of 1,225 interviews were conducted in four areas of Japan: 422 subjects were from Sapporo, 301 were from the Shizuoka area, 202 were from Suita city, Osaka, and 300 were from Kochi. The original sampling strategy specified including an equal number of males and females over 18 years of age in the sample. A stratified sampling procedure was used. Age was stratified by 5-year intervals, except for those under 20 and over 70 years of age. Participants who were 18 and 19 years old were pooled; those 70 years and older were also pooled as one group. The number of subjects obtained from each age group was proportionate to the number of people living in the area sampled.

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Interviewers were selected by the area project directors from the pool of public health workers and their supervisors. All interviewers were rigorously trained using standardized training manuals and videotapes. Data processing and statistical analyses were conducted at the computer center at Keio University using the Statistical Analysis System (SAS), which uses FACOM. M360, M380R.

Demographic Information

Subjects included 579 men and 646 women for a total of 1,225. The average length of residence for the men was 28.3±18.7 years and for the women was 26.8±18.0 years at the time of the interview. Sources of reported income included employment—48.4 percent, retirement/social security—12.4 percent, and welfare—0.2 percent. The average number of years of education was 12.4(±3.1) for men and 11.4 (±2.9) for women. The men in this study who were employed worked 41 hours per week on the average, while the women worked less than half of this amount, 19 hours. Among the unemployed, 3 percent of the men and women were looking for a job. One percent of the men and 0.3 percent of the women had been laid off from their jobs at the time of the interview. The most common areas of employment for the employed men were civil service, service industries, manufacturing, wholesale and retail business, and farming. Among the women, service delivery, civil service, and farming were the most common areas of employment. Most subjects, both men and women, were currently living with their spouse (72 percent). Separation and divorce rates were 1.1 percent among the men and 3.2 percent among the women; 18 percent of the sample was single. No one was living with a common-law spouse. Nearly 50 percent of the men and women reported having no religious affiliation, 43 percent were Buddhist, 3 percent Shinto, and 2.6 percent Christian. Half of the subjects reported an average annual family income of between 3 million yen and 7 million yen (approximately $18,000 to $42,000). About 2 percent of the men and 5 percent of the women reported an average annual income of less than 1,300,000 yen (approximately $8,000). An income above 10 million yen ($61,000) was reported by 7.8 percent of the men and 6.7 percent of the women.

Drinking Patterns

The drinking patterns of the subjects during the 12 months prior to the interview were examined. Ninety-one percent of the men and 61 percent of the women had consumed an alcoholic beverage at least once during the previous 12 months. Among the drinkers, 43 percent of the men and 6 percent of the women drank almost every day during that time. The proportion of abstainers was 9 percent for the men and 39 percent for the women.

The average age at the time of the first drink for men was lower than that of women (19.8 and 22.9 years old, respectively). Interestingly, nearly the same average ages were reported for initial experiences with cigarette smoking as well: for men, 19.6 years old; for women, 23.1 years old. With regard to the frequency of drinking, it should be noted that 41 percent of the young people (age 19 and under) reported consuming alcohol one to three times a month. However, the number of subjects under 20 years of age was too small (N=39) to draw firm conclusions. Subjects between the ages of 20 and 29 reported more frequent use of alcohol. One-third drank one to four times a week and about another third drank 1 to 3 days a month. One-third of the subjects in their thirties and their forties drank almost every day (30 percent). However, an increased number of abstainers were found among subjects who were in their fifties. The number of abstainers increased to 47 percent among those 60-69 years old and to 53 percent among those subjects in their seventies. However, quite a few drinkers (persons who drank almost every day) were also found among those in their fifties (26.8 percent), sixties (23.7 percent), and seventies or older (22.5 percent). The high proportion of frequent drinkers found among the elderly (more than 1 out of 5) suggests the need for special policy and program decisions focused on the older population to combat their potential abuse of alcohol.

Beverage Type

An examination of the consumption patterns of individual types of alcoholic beverages during the 2 weeks prior to the interview revealed that beer was the most frequently consumed alcoholic beverage (54.3 percent total; 67.2 percent for men; 42.8 percent for women), followed by sake (27.3 percent; 43.2 percent; 13.1 percent), hard liquor (26.9 percent; 38.0 percent; 16.9 percent), shochu[2] (20.9 percent; 33.0 percent; 10.1 percent), and wine (9.2

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[2] Shochu is an alcoholic beverage (25 percent alcohol content) that was originally distilled from sweet potatoes and other grains and was regarded as a "poor man's drink" after World War II. A higher quality shochu distilled from rice is now being marketed. It is still a relatively low-cost beverage. Mixed with a carbonated soft drink, it often costs less than a cup of coffee.

percent; 8.5 percent; 9.8 percent). Although wine accounted for no more than 10 percent of the ethanol consumed, it should be noted that this beverage was favored by more women than men. Women consumed on the average about 10 percent more wine than men, while the amount of other alcoholic beverages (other than wine) consumed by women was about 60 percent less than that consumed by men. Historically, the amount of alcohol consumed by women in Japan has never exceeded that of men, regardless of beverage type. The variations in type and amount of alcohol consumed among women found in this study are noteworthy and have important implications for future research.

An examination of the type of alcoholic beverage consumed by age group revealed that beer was the most popular drink among 18- to 29-year-olds. Sake was most popular with persons between 40 and 69 years old, while the use of shochu and liquor was similar across the range of 18- to 59-year-old drinkers. The typical amount of alcohol consumed by those who drank any alcoholic beverages during the 2 weeks before the interview by beverage type was beer, 1-2 large bottles; sake, 1-2 go (about 12 oz); shochu, 1-2 go; wine, 1-2 glasses; and liquor, 1-3 drinks (1-3 oz). The frequency of intoxication was positively correlated with the frequency of drinking. Of the men who reported drinking at least once a day, 28.9 percent experienced feeling high at least once a day while only one-tenth of the women reported being high this often (3.2 percent of the entire sample). However, few subjects (12 percent of men and 0.3 percent of women) who drank almost every day reported intoxication. Because the men reported drinking all types of alcoholic beverages more frequently than the women (except for wine), it is not surprising that men reported being intoxicated more often than women.

Reasons for Drinking

Regardless of gender, the reasons for drinking mentioned by all subjects included celebrating special occasions, meeting with friends, and socializing. More men than women (24.4 percent versus 4.4 percent) stated that drinking was part of a good diet. Generally, items representing traditional customs such as celebrations and social occasions were listed as positive reasons for drinking, and there was a tendency to deny reasons concerned with the possible medicinal effects of alcohol. However, frequent drinkers tended to indiscriminately agree with all reasons for drinking. With regard to possible reasons for not drinking, concern was focused on the adverse effects of alcohol on health.

Little attention was paid to economic, social, cultural, or religious reasons for not drinking. Few gender differences were found in stated reasons for or against drinking. The relationship of the frequency of drinking to marital status has been examined by several researchers. As in previous research findings, this study found subjects who were divorced or had experienced divorce drank more heavily that those who had not. Educational achievement was found to be correlated with the frequency of drinking. The highest rate (45.5 percent) of abstainers was found among those subjects with less than 8 years of formal schooling, while the highest proportion of frequent drinkers was found among subjects with more than 16 years of education (31 percent). The occupation of the subjects was also related to their drinking pattern. While 40.5 percent of the farmers were abstainers, a high prevalence of frequent drinkers was found among construction workers and persons employed in manufacturing, wholesale and retail business, and transportation, communication, utility and energy industries. With regard to occupational status and drinking patterns, frequent drinkers were most common among those in managerial positions (47 percent).

Drinking Problems

Symptoms resulting from excessive drinking ranked according to their frequency of occurrence (from the most frequent to the least frequent) were (1) blackouts, (2) felt a need to cut down or stop drinking, (3) intoxication at work (considered as hangover), (4) regret later, (5) warned by doctors, and (6) morning drinking. Men reported more problems than women, but the order of occurrence of the problems among women was similar to that of men.

Only 2.0 percent of the men reported binge drinking; none of the women did. However, 17.7 percent of the women reported having felt a need to cut down or stop drinking. This was the problem most frequently reported by women. Between 0.2 percent to 3.6 percent of all subjects reported experiencing at least one of the above drinking problems once a week or more. As expected, a greater number of problems resulting from drinking were reported by frequent drinkers. Among the men who had received complaints about their drinking, their spouse or mother was most often identified as the complainant, followed by their father. Women also reported mothers, spouses, and fathers as the most frequent sources of criticism concerning their drinking. The attitudes of those most critical of the subjects' drinking seemed to reflect their attitudes about their own drinking problems, for example, being critical of problematic drinking and drinking problems (i.e., more critical of women's drinking than that of men). This finding should be an interesting research topic for future work. Job problems resulting from drinking were reported by 3.2 percent of the men, with 0.3 percent having lost a job due to drinking. No job problems or job loss were reported by the women. Trouble with the law, police, etc. was reported by 4.3 percent of the men and 0.9 percent of the women, but the women refused to provide further detailed information about the types of problems. Men reported having to pay traffic fines, having their driver's license suspended, and being held in jail as examples of problems with the legal system.

While many subjects reported problems associated with drinking, their evaluation of their own drinking habits did not reflect this. Most subjects considered themselves to be light drinkers or social drinkers. Only 0.2 percent of all subjects thought they might be a problem drinker. The spouse's assessment of the subject's drinking habits reflects the general drinking practices of Japanese society. In other words, wives were more frequently concerned about their spouses' drinking too much. Generally, the husbands reported drinking more than their wives, and their wives agreed with their husbands' assessment.

Cultural Understanding

Several questions were asked about the concepts and perceptions of the etiology of alcoholism as a genetic problem, a social problem, or a psychological problem. The most popular response to the etiological bases of alcoholism was that alcoholism is a psychological problem (men, 81.6 percent; women, 85.9 percent). Less than half of all subjects considered alcoholism a social problem, and only a quarter considered it to be a genetic problem. No differences between males and females were found in response to these questions. These attitudes are important factors to consider in patients' understanding of alcoholism and in planning educational and therapeutic approaches.

Questions concerning the awareness of drinking and alcohol-related problems were grouped into six conceptually similar dimensions. The first dimension, the positive effects of alcohol consumption, received a positive response by 80 percent of all subjects. More men than women showed a positive response to this factor. Seventy percent of the subjects identified negative aspects of drinking. One out of every three subjects considered intoxication to be socially unacceptable and embarrassing.

Concerning the level of knowledge and awareness about alcoholism, 89 percent considered alcoholism to be a disease. On the other hand, 52 percent of the subjects did not believe that "anyone who drinks alcohol can become alcoholic." This seems to contradict the disease concept of alcoholism. However, as stated earlier, most subjects considered themselves to be light drinkers (the average amount consumed was 1-2 bottles of beer and/or 1-2 go [about 6-12 oz] of sake per day), and probably did not consider "heavy drinking" as a likely category of drinking.

Most subjects held an optimistic and positive attitude toward the policies and treatment programs for alcoholism available in Japan. They felt very strongly that it is the individual's responsibility to deal with alcoholism and that abstinence is necessary for treating alcoholism (63 percent of responses). The influence of prevention efforts and different volunteer movements that have arisen within the past year were probably reflected in the positive attitudes about the treatment of alcohol problems and the necessity of abstinence for overcoming alcoholism. With regard to the facilities that assist alcoholics, Danshu-Kai was the most well known volunteer organization, whereas Alcoholics Anonymous and other organizations were not as familiar.

Psychiatric hospitals and mental health centers, rather than general hospitals, were considered to be important resources for the treatment of alcoholism.

Generally, variations in permissive attitudes about drinking practices reflected differences in the demography of the population. Most subjects set strict limits for young girls and boys in terms of the amount and frequency of drinking, while male permissive attitudes were seen toward well-informed adult members of the society. Men were generally more permissive than women in their attitudes about drinking. Although men reported drinking more than women, 98 percent of the men reported that they did not drink before driving a car or going to work.

An examination of the association between cultural understanding and the frequency of drinking revealed a positive relationship between frequency of drinking and a person's permissiveness regarding drinking. Abstainers, however, had firm concerns about negative aspects of drinking. In addition, more abstainers than frequent drinkers endorsed the disease concept of alcoholism. Clinicians who engage in the treatment of alcoholism often encounter psychological mechanisms suggestive of denial of alcohol dependence among alcoholics. However, considerable agreement about the existence of alcohol problems in Japanese society was found even among frequent drinkers, while abstainers tended to define drinking problems as being rooted in the moral problems of society.

KAST

Several alcoholism screening scales (Manson 1948; Seltzer 1971) are available in the United States. However, it is difficult to use these scales to screen for alcohol problems in Japan because of cultural differences. In 1977, the Kurihama Alcoholism Screening Test (KAST) was designed to screen for alcohol abuse and alcoholism among the Japanese population (Kono et al. 1977). The KAST consists of 14 items describing experiences that are often related to frequent and/or heavy drinking in Japan. While the KAST is not designed to make a clinical diagnosis of alcohol abuse or alcoholism, those who score two points higher are classified as serious problem drinkers and have a high probability of being diagnosed as alcoholics by clinicians. Persons with scores between 0-2 points are considered problem drinkers, -5 to 0 as pre-problem drinkers, and less than -5 as normal drinkers or nondrinkers.

The KAST was administered as part of the survey and completed by all respondents. The results show that the mean score of the KAST in this study was -4.9(±2.7) for the total population. A positive association was found between the KAST score and heavy drinking symptoms and problems associated with frequent drinking. As expected, men scored significantly higher than women ($X = -4.0[\pm 3.5]$ for men and $X = -5.7[\pm 1.4]$ for women, $t = 10.26, p < .01$). The KAST score ranged from -6.1 to 12.0, with 56 percent of all respondents scoring in the lowest range. The results of our study showed that 7.8 percent of male and 0.5 percent of female subjects scored 2.0 or higher on the KAST, while 4.9 percent of male and 1.2 percent of female subjects scored 0-2 points. Normal drinkers or abstainers were found in 65.8 percent of the male and 92.3 percent of the female samples.

Treatment Principle in Japan

The National Institute on Alcoholism (Kurihama National Hospital) was established as a center for alcoholism under the direct control of the Japanese Ministry of Health and Welfare, based on the ministry's concept of key facilities. The activities of the Institute's three main divisions—Treatment, Training, and Research Unit—consist respectively of treatment for alcoholic patients, training for professionals engaged in the alcoholism field, and basic and clinical research on alcoholism. The basic concept for the treatment of alcoholism was established in the early 1960s at the Institute and has since been continually refined. It has spread throughout Japan mainly through professionals taking the training courses held at the Institute. Now it is generally recognized that the Kurihama therapeutic system is the most fundamental and influential treatment model for alcoholism in Japan.

The treatment philosophy of the Kurihama therapeutic system is based on the patients' attitudes about their problem and the availability of medical resources. The primary principle is that the free will of the patient is influenced by the patient's raison d'etre, and this is a prerequisite for treatment. Looking upon alcoholism as a disease "having nothing to do with morals" is to evade patients' responsibilities for themselves. Thus, use of strict medical procedures is not encouraged. Patients are not excused from their feeling of guilt, and their willpower is utilized as a therapeutic tool.

The following conditions are considered to be an integral part of rehabilitation, which views patients as active participants in the treatment process.

1. It is essential that both patients and therapists (and other members of the therapeutic team) overcome their own prejudices for treatment to proceed. This is an indispensable foundation for the pursuit of essence in human nature, which is loving and individualistic.

2. "Therapeutic fairness" incorporates the concept of therapeutic and social justice into the interpersonal relationship of therapist-patient-family society.

3. The accurate diagnosis and classification of each patient must be matched with individualistic and humanistic treatment which we termed "the sincere essentialization."

4. "Essentialization" recognizes that treatment is an ongoing, indeed, a lifelong, process.

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A Survey of Drinking Patterns and Alcohol-Related Problems in Japan

Tooru Tsunoda[1]

Prior to conducting this study in late 1984, little research had been done on patterns of Japanese alcohol use that would permit detailed cross-cultural comparisons with other modern industrialized nations. Several years ago a large-scale study was attempted but was unsuccessful largely because of the resistance of potential respondents to self-disclosure. The Japanese Technical Committee had extensive discussions before this study was undertaken regarding the survey's purpose and how it could be conducted to ensure that valid data were obtained from representative samples in the areas chosen. The intent of the present study was to conduct a survey of residents of four areas of Japan in such a way that representative samples were obtained and valid information concerning alcohol use and use-associated problems was derived. In order to make this information maximally useful, it was to be obtained in a form comparable to that being collected in other countries, including the United States.

Sampling Design

Four geographical areas were chosen that were likely to provide valid and reliable data on urban and rural patterns of alcohol use. The areas chosen and the size of the samples in each were:

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- Sapporo city and its surrounding area on the island of Hokkaido; N=422 (191 males and 231 females)

- Shizuoka city (about 100 miles southwest of Tokyo) and its surrounding area; N=301 (151 males and 150 females)

- Suita city (a suburb of Osaka); N=202 (100 males and 102 females)

- Surrounding area of Kochi city on the island of Shikoku; N=300 (137 males and 163 females)

- Total sample size = 1,225 (579 males and 646 females)

The basic principles followed in choosing these areas were:

1. A list of virtually all residents was available and good cooperation could be assured.

2. An age-stratified random sample of 12 age groups could be obtained for age groups 18-19, 20-24, 25-29, 30-34, 35-39, 40- 44, 45-49, 50-54, 55-59, 60-64, 65-69 and 70+.

3. The numbers of males and females were approximately equal.

4. The number chosen in each age group was proportional to that of the population's age distribution in each area.

Although exactly identical sampling procedures could not be followed in all four areas, the probability of sampling a given resident in each of the areas was equal and the sample obtained in each is adequately representative of that area.

The questionnaire used was that originally employed in the WHO Community Response study (Rootman and Moser 1985) with slight modifications for the purposes of the study. The questionnaire was then administered in a face-to-face interview by specially trained interviewers.

Interviewers were selected by the researcher in charge of each of the areas from a pool of local public health service personnel. Interviewers were rigorously trained using a standard training manual and audio-visual tapes. In order to insure uniformity in conducting the interviews, the content of the questionnaire and the way in which it was to be administered were carefully illustrated in the training material provided. Interviews were then conducted mainly during October and November of 1984.

Data Analysis

All completed questionnaires were collected and examined by the staff in each survey area. Obviously incorrectly coded responses were corrected at this stage and the coded material forwarded to a data entry service.

Basic statistics were calculated using FACOM M 360, M 380 at the Keio University Computer Center. Data on age and sex were checked and corrected, if necessary, at this stage. Cross-tabulations were then performed between such variables as frequency and amount of alcoholic beverages consumed, the amount of alcohol and the flushing phenomenon, relationships to each of the demographic factors, drinking problems, and cultural perceptions. Cross-tabulation of the relationship between drinking problems and demographic factors were completed using the IBM system of the Parklawn Computer Center in Rockville, Maryland.

Results and Discussion

The theoretical and actual size of the samples sought in each of the four areas is indicated in table 1. The sample size chosen was based on the number required to be representative and budgetary limitations for collecting the data. As can be seen, the actual sample sizes obtained did not substantially differ from the numbers sought. Differences noted were primarily because of the resampling required by those who declined to participate. (The rate of refusal ranged from 5 to 15 percent.) In Sapporo resampling was done without regard to gender. In Kochi, a difference between the theoretical and expected numbers also resulted because the sampling method initially used obtained a random sample without regard to gender.

Percentages and actual numbers of drinkers are also shown in table 1. About 85 to 98 percent of males, depending on the geographic area, were classified as drinkers, meaning that they reported having consumed an alcoholic beverage of some type in the year prior to the interview. From 31 percent to 81 percent of females, depending on the geographic area, were classified as drinkers by the same criterion. Another survey 15 years ago had estimated that 90 percent of adult males and 45 percent of adult females in Japan consume alcohol (Kosei Tokei Kyokai 1985). The present findings are generally consistent with these earlier figures, though a wider range of use was found in this female sample than in the earlier one. As indicated, the percentage of drinkers was generally higher in the predominantly urban areas than it was in rural areas. This suggests that the degree of urbanization affects drinking patterns. The extent to which women drink is also related to the level of drinking in men. In areas in which a higher percentage of men are classified as drinkers, more women are also so classified.

Table 1.—Numbers of respondents and percentage of drinkers by area and sex

	Sapporo (urban and rural)	Shizuoka (urban and rural)	Osaka (urban)	Kochi (rural)	Total
Initial goal					
Both sexes	400	300	200	300	1,200
Actual number					
Male	191	151	100	137	579
Female	231	150	102	163	646
Both sexes	422	301	202	300	1,225
Percentage of drinkers					
Male	94.2 (179)	90.1 (136)	98.0 (98)	84.7 (116)	91.5 (529)
Female	68.3 (157)	68.7 (103)	81.0 (81)	31.1 (51)	61.0 (392)
Both sexes	80.0 (336)	79.4 (239)	89.5 (179)	55.7 (167)	75.4 (921)

Note: A "drinker" is defined as a respondent who reported drinking at least once a year or more. Numbers in parentheses are actual numbers of drinkers.

As shown in tables 2 and 3, all respondents, both drinkers and nondrinkers combined (table 2), and drinkers alone (table 3) were classified into three categories based on their total absolute alcohol consumption using Clark's classification method (Clark 1985). Both the amount consumed and the pattern of consumption are of research interest. The total amounts consumed were calculated using the absolute alcohol content of alcoholic beverages given by the Japanese Association for Alcohol and Health (Alcohol Kenko Igaku Kyokai) as the basis (Ishii 1984). The percentages of alcohol (by volume) it cites are beer, 4.5 percent; sake (nikyu-shu), 15.5 percent; sake (ikkyu-shu type), 16.5 percent; shochu, 25 percent; wine, 12 percent; and liquor (whiskey), 43 percent. For the purposes of this survey, the alcohol content of sake, combining data for both types, was computed as 16 percent.

Nearly a third (32.3 percent) of the male respondents classified as drinkers acknowledged consuming the equivalent of more than 21 ounces of absolute alcohol per biweekly period. A much smaller percentage of women drinkers—3.6 percent—reported consuming that large an amount.

Table 4 specifies the various demographic factors by which the samples were classified. These included geographical area, sex, seven combined age categories, marital status, religion, level of education, and income. As table 5 indicates, the distribution of virtually all of these demographic variables significantly differed among the four geographical areas sampled. The fact that these differ significantly is not surprising. Urban areas of Japan are generally characterized by having younger, better educated, and more affluent citizens than predominantly rural areas. Osaka and Kochi had lower percentages of unmarried respondents than the other two areas. Kochi, with its predominantly rural sample, had fewer female drinkers, probably because of more traditional role expectations with respect to drinking by women.

Although a difference in the distribution of the various religious preferences was observed in the different areas, it should be noted that such classifications may be less indicative of rigid religious differences in Japan than in other countries. There is considerable religious tolerance and flexibility in Japan. It is not uncommon for people to combine practices of two or more belief systems without this having profound significance. Thus, the differences noted were not regarded as having much in the way of practical implications.

Table 2.—Percentage of each alcohol consumption status for all respondents (both drinkers and nondrinkers) by area and sex

Amount of consumption per 2 wks (in ounces)	Sapporo	Shizuoka	Osaka	Kochi	Total
Both sexes					
<7	64.5 (272)	73.4 (221)	63.9 (129)	70.7 (212)	68.1 (834)
7-21	16.6 (70)	16.3 (49)	18.8 (38)	16.0 (48)	16.7 (205)
21+	19.0 (80)	10.3 (31)	17.3 (35)	13.3 (40)	15.2 (186)
Total	(422)	(301)	(202)	(300)	(1,225)
Male					
<7	35.6 (68)	51.0 (77)	36.0 (36)	42.3 (58)	41.3 (239)
7-21	27.8 (53)	28.5 (43)	30.0 (30)	30.7 (42)	29.0 (168)
21+	36.7 (70)	20.5 (31)	34.0 (34)	27.0 (37)	29.7 (172)
Total	(191)	(151)	(100)	(137)	(579)
Female					
<7	88.3 (204)	96.0 (144)	91.2 (93)	94.5 (154)	92.1 (595)
7-21	7.4 (17)	4.0 (6)	7.8 (8)	3.7 (6)	5.7 (37)
21+	4.3 (10)	.0 (0)	1.0 (1)	1.8 (3)	2.2 (14)
Total	(231)	(150)	(102)	(163)	(646)

Note: Actual numbers of respondents in parentheses. Regarding the classification of consumption status, refer to the text.

Table 3.—Percentage of each alcohol intake status for all drinkers by area and sex

Amount of intake per 2 wks (in ounces)	Sapporo	Shizuoka	Osaka	Kochi	Total
Both sexes					
<7	55.7 (187)	66.5 (159)	59.8 (107)	47.3 (79)	57.8 (532)
7-21	20.8 (70)	20.5 (49)	20.7 (37)	28.7 (48)	22.2 (204)
21+	23.5 (79)	13.0 (31)	19.6 (35)	24.0 (40)	20.1 (185)
Total	(336)	(239)	(179)	(167)	(921)
Male					
<7	31.8 (57)	45.6 (62)	34.7 (34)	31.9 (37)	35.9 (190)
7-21	29.6 (53)	31.6 (43)	30.7 (30)	32.6 (42)	31.8 (168)
21+	38.6 (69)	22.8 (31)	34.7 (34)	31.9 (37)	32.3 (171)
Total	(179)	(136)	(98)	(116)	(529)
Female					
<7	82.8 (130)	94.2 (97)	90.1 (73)	82.4 (42)	87.2 (342)
7-21	10.8 (17)	5.8 (6)	8.6 (7)	11.8 (6)	9.2 (36)
21+	6.4 (10)	.0 (0)	1.2 (1)	5.9 (3)	3.6 (14)
Total	(157)	(103)	(81)	(51)	(392)

Note: Actual numbers of drinkers in parentheses. Regarding the classification of alcohol intake status, refer to the text.

Table 4.—Demographic factors

Factor	Content
Area	Four areas in Japan: Sapporo, Shizuoka, Osaka, and Kochi
Sex	Male and female
Age group	Classified into 7 categories: 18-19 20-29 30-39 40-49 50-59 60-69 70+
Marital status	Classified into 6 categories: Married and living with spouse Married and living separately from spouse Living with someone (spouse-like relationship) Widowed Divorced Single (never married)
Religion	Classified into 6 categories: Buddhism Shinto Catholic Protestant Other None
School career	Total school years classified into 4 categories: Up to 8 years 9 to 11 years 12 to 15 years More than 16 years
Income	Annual income classified into 7 categories: Lower than 1,300,000 yen ($6,500) 1,300,000-2,999,999 yen ($15,000) 3,000,000-4,999,999 yen ($25,000) 5,000,000-6,999,999 yen ($35,000) 7,000,000-9,999,999 yen ($50,000) 10,000,000 yen and over Refusal to answer

Table 5.—Results of chi-square test on cross-tabulation between demographic factors by drinking status and sex

	Sex	Age/ class	Marital status	Religion	School career	Income
All respondents						
Male	--	**	**	**	**	**
Female	--	**	*	**	**	**
Both sexes	NS	**	**	**	**	**
Drinkers						
Male	--	**	*	**	**	**
Female	--	**	*	**	**	**
Both sexes	**	**	NS	**	**	**

NS = not significant
*Statistically significant at $p < .05$
**Statistically significant at $p < .01$

Drinking Problems

Table 6 provides English translations of the questions asked in the standardized interview, which pertained to 18 possible drinking problems. It also gives a summary description of the question's content. (For example, "Have you ever been ashamed of something you did while drinking?" is summarized as shame in drinking.) If the drinker answered "yes" to having experienced any of the problems mentioned during the preceding year, he or she was classified as a drinker with an alcohol-related problem.

Summarized results of chi-square testing of the cross-tabulations between each of the alcohol-related problems and other demographic characteristics are shown in tables 7 (for both sexes), 8 (for male), and 9 (for female). Only two of the problem areas for both sexes appear to be statistically significantly different among four geographical areas. Experiencing blackout was apparently reported more often in the Kochi area. Since the significance of this difference is only at the .05 level, it may be the result of chance sampling differences. With 18 alcohol-related problem areas, one of them

Table 6.—Questions about alcohol-related problems

	Abbreviated form	Content
1.	Cut down, stop	Have you felt that you should cut down on your drinking or stop altogether?
2.	Untimely drunk	Have you sometimes gotten drunk even when there was an important reason to stay sober?
3.	Blackout	Have you awakened the next day not being able to remember some of the things you had done while drinking?
4.	Effect felt at work	Have you felt the effects of alcohol while at work?
5.	Morning drink	Have you taken a drink first thing when you get up in the morning?
6.	Advised for health	Have you been told by a doctor or health worker that the amount you were drinking was having a bad effect on your health?
7.	Morning hands shaking	Have you had your hands shake a lot the morning after drinking?
8.	Hangover	Have you stayed intoxicated for several days at a time?
9.	Told to get out	Have you been told to leave a place because of your drinking?
10.	Fight in drinking	Have you gotten into a (physical) fight because of your drinking?
11.	Shame in drinking	Have you been ashamed of something you did while drinking?
12.	Accident on the road	Have you been involved in a road accident when you have been drinking?
13.	Accident at home	Have you been involved in an accident at home when you have been drinking?
14.	Accident at work	Have you been involved in an accident at work when you have been drinking?

Table 6.—Questions about alcohol-related problems—continued

Abbreviated form	Content
15. Instead of a meal	Have you regularly had a drink instead of a meal?
16. Being warned	Have any of your friends, relatives, or acquaintances ever said anything about your drinking or suggested you cut down?
17. Problem on job	Thinking of your working life, has your drinking ever caused difficulties?
18. Trouble with authority	Have you ever had any difficulties with the police or other authorities in which your drinking was involved?

might be expected to approach significance on the basis of chance factors alone. The second area, shame in drinking, was more often reported in the Sapporo and Shizuoka areas. This is probably the result of area differences in age distribution, education, and marital status, all of which are related to having experienced shame in relation to one's drinking.

There is a consistent difference in the number of problems reported by male drinkers compared to female drinkers. This indicates that Japanese men who drink are more likely to have drinking-related problems than women who drink. Since the data collected represent a single point in time, they shed no light on the question of whether Japanese women's problems in relation to drinking have increased in recent years as has been suggested by some observers. Additional surveys in the future could provide an objective indication of whether women's drinking problems are, in fact, increasing.

As statistical significance was found between "age group" and "effect felt at work" in table 8, male younger drinkers more frequently reported experiencing problems at work related to drinking and shame related to drinking than did older drinkers. This may be indicative of younger drinkers being more likely to indulge in binge drinking and possibly feeling less of a sense

Table 7.—Results of chi-square test on the cross-tabulation for all drinkers between demographic factors and alcohol-related problems

Alcohol-related problem	Area	Sex	Age group	Marital status	Religion	School career	Income
1. Cut down, stop	NS	**	NS	NS	NS	NS	NS
2. Untimely drunk	NS	**	NS	(*)	NS	NS	NS
3. Blackout	*	**	NS	*	NS	NS	NS
4. Effect felt at work	NS	**	**	**	NS	NS	*
5. Morning drink	NS	**	*	NS	NS	NS	NS
6. Advised for health	NS	**	*	NS	NS	NS	NS
7. Morning hands shaking	NS	*	NS	(**)	NS	NS	NS
8. Hangover	NS	NS	NS	(**)	NS	NS	(**)
9. Told to get out	NS	NS	NS	NS	NS	NS	NS
10. Fight in drinking	NS	NS	NS	NS	NS	NS	NS
11. Shame in drinking	**	**	**	(**)	NS	*	NS
12. Accident on the road	NS	NS	NS	(*)	NS	NS	NS
13. Accident at home	NS	NS	NS	NS	NS	NS	NS
14. Accident at work	NS	NS	NS	NS	NS	NS	NS
15. Instead of a meal	NS	*	NS	NS	NS	NS	NS
16. Being warned	NS	**	NS	NS	NS	**	**
17. Problem on job	NS	**	NS	(**)	NS	NS	NS
18. Trouble with authority	NS	**	NS	NS	NS	*	NS

NS = Not significant

*Statistical significance at $p < .05$

**Statistical significance at $p < .01$

(*), (**)Chi-square may not be a valid test for these data in parentheses.

Table 8.—Results of chi-square test on the cross-tabulation for male drinkers between demographic factors and alcohol-related problems

Alcohol-related problem	Area	Age group	Marital status	Religion	School career	Income
1. Cut down, stop	NS	NS	NS	NS	NS	NS
2. Untimely drunk	NS	NS	NS	NS	*	NS
3. Blackout	NS	NS	NS	NS	NS	NS
4. Effect felt at work	NS	**	NS	NS	**	NS
5. Morning drink	*	*	(*)	NS	NS	NS
6. Advised for health	NS	NS	NS	NS	NS	NS
7. Morning hands shaking	NS	NS	(**)	NS	NS	NS
8. Hangover	NS	NS	(**)	NS	NS	NS
9. Told to get out	NS	NS	NS	NS	NS	NS
10. Fight in drinking	NS	NS	NS	NS	NS	NS
11. Shame in drinking	NS	NS	(**)	NS	NS	NS
12. Accident on the road	NS	NS	NS	(*)	NS	(*)
13. Accident at home	NS	NS	NS	NS	NS	NS
14. Accident at work	NS	NS	NS	NS	NS	NS
15. Instead of a meal	NS	NS	NS	NS	NS	NS
16. Being warned	NS	NS	NS	NS	*	**
17. Problem on job	NS	NS	NS	NS	NS	NS
18. Trouble with authority	NS	NS	NS	NS	**	NS

NS = Not significant

*Statistical significance at $p < .05$

**Statistical significance at $p < .01$

(*),(**)Chi-square may not be a valid test for these data in parentheses.

Table 9.—Results of chi-square test on the cross-tabulation for female drinkers between demographic factors and alcohol-related problems

Alcohol-related problem	Area	Age group	Marital status	Religion	School career	Income
1. Cut down, stop	NS	NS	NS	NS	NS	NS
2. Untimely drunk	NS	NS	(**)	**	*	(**)
3. Blackout	NS	*	(**)	NS	NS	NS
4. Effect felt at work	NS	NS	(**)	NS	NS	NS
5. Morning drink	NS	NS	(*)	NS	NS	NS
6. Advised for health	NS	NS	(**)	NS	NS	NS
7. Morning hands shaking	NS	NS	(**)	(**)	NS	NS
8. Hangover	NS	NS	NS	NS	NS	NS
9. Told to get out	NS	NS	NS	NS	NS	NS
10. Fight in drinking	NS	NS	NS	NS	NS	NS
11. Shame in drinking	NS	NS	**	NS	NS	NS
12. Accident on the road	**	*	(**)	NS	NS	NS
13. Accident at home	NS	NS	NS	NS	NS	NS
14. Accident at work	NS	NS	NS	NS	NS	NS
15. Instead of a meal	*	NS	NS	NS	NS	NS
16. Being warned	NS	NS	NS	NS	NS	NS
17. Problem on job	NS	NS	NS	NS	NS	NS
18. Trouble with authority	NS	NS	NS	NS	NS	NS

NS = Not significant

*Statistical significance at $p < .05$

**Statistical significance at $p < .01$

(*),(**)Chi-square may not be a valid test for these data in parentheses.

of responsibility in relation to their work. By contrast, significance was found between "age group" and "morning drink" in the same table: middle-aged male drinkers more often indulged in morning drinking and, as significance was shown between "age group" and "advised for health" in table 7, middle-aged drinkers of both sexes were more often advised to reduce their drinking for health reasons than younger drinkers. This may indicate that compulsive drinking is more common in the middle-aged drinker and that his or her health is more likely to have been affected by having drunk heavily for a longer period of time than a younger counterpart. Since many of the physical effects of excessive drinking do not become apparent until after many years of drinking, they are less likely to be noted in younger drinkers.

As is indicated in tables 7, 8, and 9, and although it would be desirable to confirm the data relating drinking problems to marital status because of the small size of some of these cells, divorced people, especially women, were more likely to report having alcohol-related problems than those who were married. This would be generally consistent with observations in Western nations.

There was little evidence that religious preference had any relationship to alcohol-related problems, but this might be further pursued in another larger study since the sample sizes in some of the cells of this study were quite small.

Higher educational attainment was related in both sexes to several categories of problems, namely, shame in drinking, being warned about one's drinking by others, or having trouble with authority because of drinking. Higher income was also related in males to being warned about one's drinking by others. Higher income people more often acknowledged feeling the effects of drinking at work. This may reflect the fact that higher levels of education as well as income are associated with more frequent drinking in larger amounts. The details of the results (not shown in the tables) revealed that male drinkers with intermediate levels of education more often reported having gotten drunk when there were important reasons for remaining sober, having trouble with authority relating to drinking, and feeling the effects at work, and that blackouts were more often reported by female drinkers of intermediate educational attainment. These results suggest that there may be more complicated relationships between the variables involved than can be drawn from any simple interpretation of the data.

A relationship between drinking problems and income suggests that, as in other countries, problems of alcohol abuse are by no means limited to the less affluent. Evidence that alcohol- related problems are common even among dominant groups in Japanese society suggests that such problems should not be ignored. The clear indication that men more frequently have drinking problems than women also has considerable public health significance.

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A Comparative Analysis of U.S. and Japanese Drinking Patterns

Walter B. Clark[1] *and Michie Hesselbrock*[2]

This presentation compares Japanese and U.S. data on alcohol use patterns and alcohol problems. Four study populations were included in the study: Japanese, Americans of Japanese ancestry living in Santa Clara County, Americans of Japanese ancestry living in Oahu, Hawaii, and Caucasians who live in Santa Clara County. A WHO questionnaire designed to assess healthy alcohol consumption patterns was modified for use in this study by both U.S. and Japanese scientists representing the National Institute on Alcohol Abuse and Alcoholism and the National Institute on Alcoholism in their respective countries. The questionnaire consisted of 59 items that obtained information about demography, drinking patterns, drinking problems, cultural understanding of alcoholism, the flushing response to drinking, history of physical illness, and smoking history.

In Japan, individual interviews with Japanese living in four different areas of Japan were conducted during the 3-month period between September and November 1984. A total of 1,225 interviews were conducted in four areas of Japan: 422 subjects were from Sapporo city, 301 were from the Shizuoka city area, 202 were from Suita City, Osaka, and 300 were from Kochi city. Age was stratified by 5-year intervals, except for subjects under 20 and those subjects 70+ years of age. Eighteen- and nineteen-year-olds were treated

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as one group and those 70 and older were also pooled together. The number of subjects obtained from each age group was proportionate to the population in each age group living in the area sampled.

In the United States, it was not feasible to obtain strict probability samples of Americans of Japanese ancestry or Japanese residents in Santa Clara County since they comprised of only 2 percent of the population. Consequently, people with Japanese surnames were contacted by telephone. For the sample of Americans of Japanese ancestry in Hawaii and a comparison sample of "Caucasians" in Santa Clara County, random digit dialing of telephone numbers generated the study sample. Individual interviews were conducted by trained interviewers with Americans of Japanese ancestry in Santa Clara County and in Oahu. Phone interviews using a shortened version of the sample questionnaire were conducted with Caucasians in Santa Clara County. In Oahu, data were obtained from 271 men and 243 women; in Santa Clara, 301 male and 214 female Japanese-Americans were interviewed. The Caucasian sample included 198 men and 325 women.

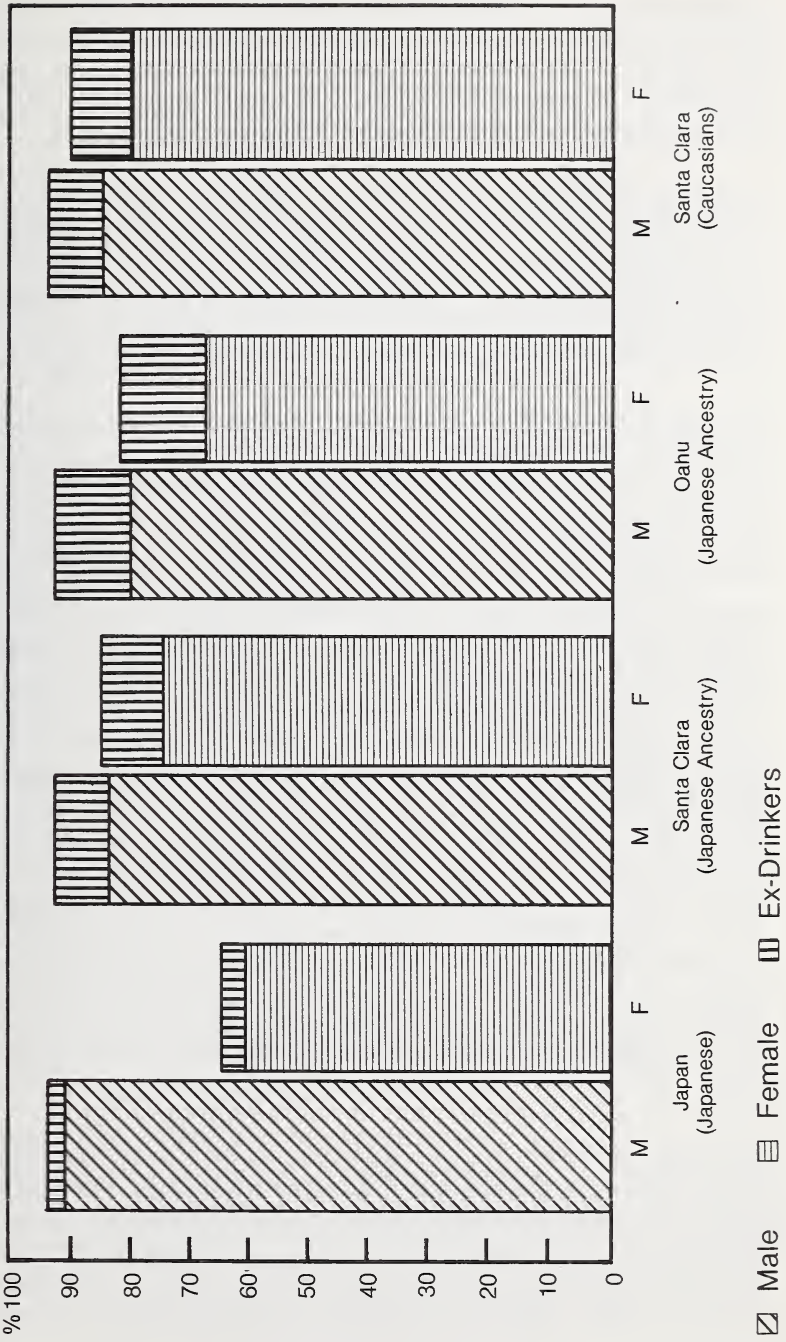
For this analysis, the four samples from Japan were pooled. Since the composition of the three U.S. samples was different in terms of gender and age, the data from all three U.S. sites were age adjusted to reflect the age composition of the 1980 U.S. census data. The Japanese data have not been weighted.

Alcohol Use

Figure 1 presents the distributions of alcohol use for men and women in the four study sites. The data indicate that the proportion of drinkers in all four study sites is quite high with the exception of Japanese women in Japan. The highest rate of current drinkers was found among Japanese men (91 percent). All U.S. sites reported somewhat lower figures for males, 85 percent for Caucasian males in Santa Clara, 84 percent for Japanese American men in Santa Clara, and 80 percent for Japanese American men in Hawaii. In addition, almost all of the male drinkers in Japan are current drinkers; only 3 percent reported that they were ex-drinkers, that is, not having drunk during the past 12 months. The proportion of ex-drinkers in the U.S. sample was somewhat higher, 10 percent for men of Japanese ancestry and Caucasians in Santa Clara and 13 percent for men in Oahu.

Among women, however, the highest proportion of current drinkers was found among Caucasians (81 percent for current) followed by women of

Figure 1.—Alcohol use by sex for four study populations*



*Percent weighted for the U.S. samples

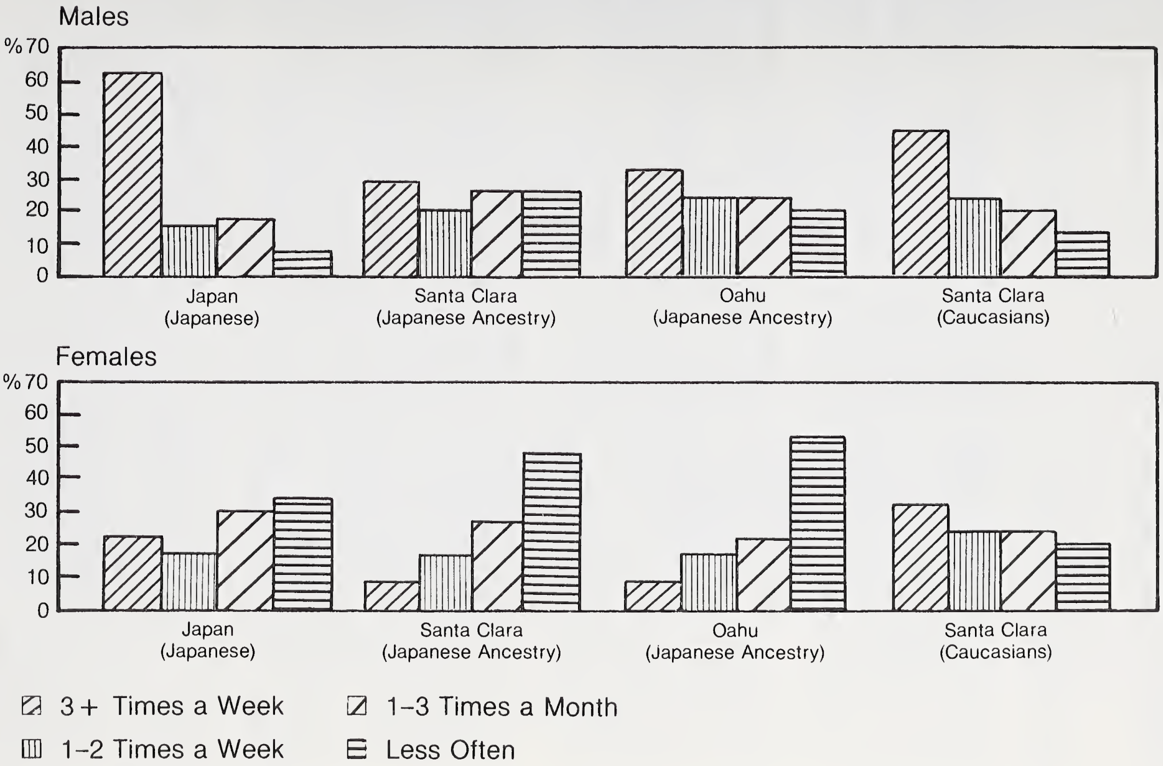
Japanese ancestry in Santa Clara County (75 percent). Women in Oahu and Japan reported lower rates of current drinkers (68 percent and 61 percent current). Ten percent of Caucasian women described themselves as ex-drinkers; 14 percent of Japanese-American women from Oahu and 4 percent of Japanese women classified themselves as ex-drinkers.

Comparing the genders, it was found that fewer women than men of Japanese ancestry at all three sites reported being current drinkers. The male-female differences in the proportion of drinkers were the largest among the sample from Japan (30 percent), followed by the samples in Oahu (12 percent) and Santa Clara (9 percent). Among the Caucasians, the rates of current drinkers among men and women were very similar.

In terms of frequency of drinking, Japanese men were different from male respondents at the other sites in that a higher proportion reported frequent drinking. Caucasian men drank less often than Japanese men but more often than the men of Japanese ancestry in Santa Clara County or Hawaii. Men of Japanese ancestry in Santa Clara and Oahu were similar in terms of their reported frequency of drinking. Figure 2 presents the overall frequency of drinking among current drinkers by sex at the four sites. The highest proportion of frequent drinkers was reported by the Japanese men (62 percent, 3+ times a week; 15 percent, 1-2 times a week; 16 percent, 1-3 times a month). Only 7.7 percent of male current drinkers reported drinking less often than once a month. Nearly half of the Caucasian males were frequent drinkers (44 percent, 3+ times a week). While the proportion of frequent drinkers was lower than that of Japanese men, most Caucasian male drinkers drank regularly (23 percent, 1-2 times a week and 20 percent, 1-3 times a month). However, men of Japanese ancestry in Santa Clara and Oahu reported drinking less frequently, (29 percent and 32 percent, 3+ times a week), with nearly half of them drinking 1-2 times a month (20 percent and 24 percent) or 1-3 times a month (26 percent and 24 percent). Nearly a quarter of the men of Japanese ancestry in Santa Clara (26 percent) and in Oahu (20 percent) reported they drank less than once a month. The proportion of frequent drinkers was lower than that for men at other sites.

For women, unlike men, the highest proportion of frequent drinkers was found among Caucasian women (32 percent) followed by Japanese women (21 percent). The proportion of frequent drinkers was identical among the Japanese American women in Santa Clara and in Oahu (9 percent) and significantly lower than that found at the two other sites. Caucasian women tended to drink regularly (24 percent, 1-2 times a week; 24 percent, 1-2

Figure 2.—Overall frequency of drinking by current drinkers*



*Percent weighted for the U.S. samples

times a month), while 16 percent of the women in the remaining three sites reported drinking 1-2 times a week. Nearly half of the Japanese American women in California and Oahu (48 percent and 52 percent) reported drinking less often than once a month.

Beverage Type

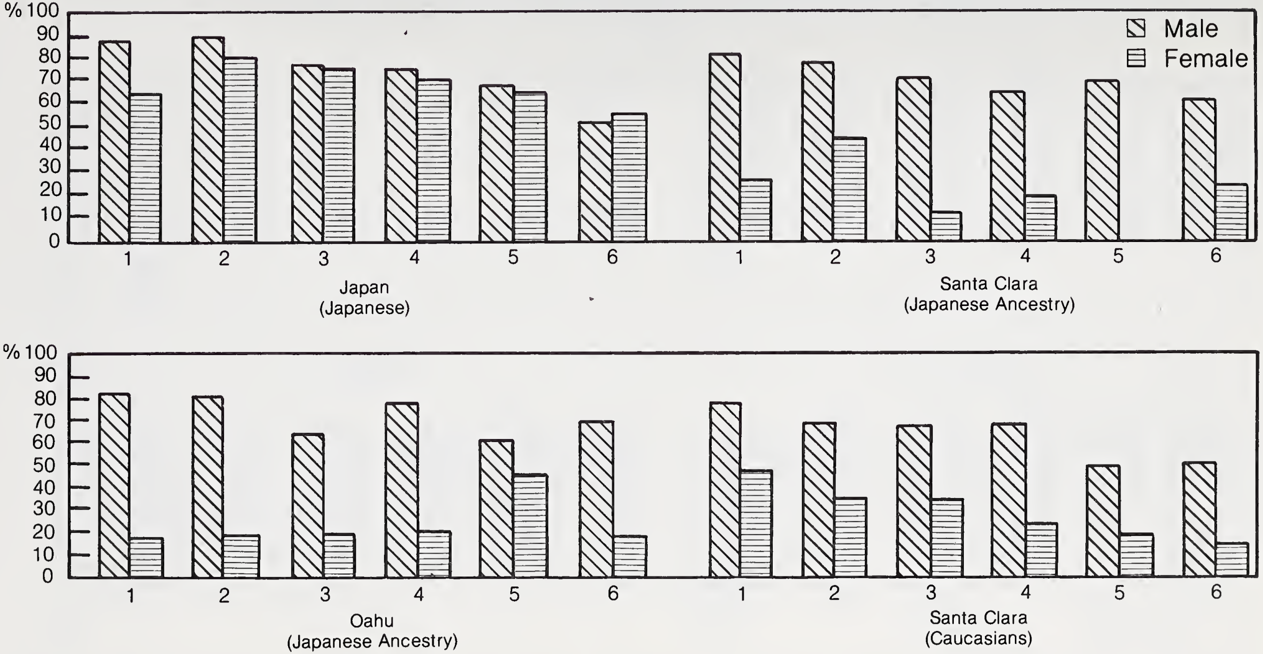
The types of beverage consumed by current drinkers by age groups are shown in figures 3, 4, 5, 6, and 7. Beer was the most widely consumed alcoholic beverage among men of all ages at all four sites. Men under the age of 30 represented the highest proportion of beer consumers at all four sites, with Japanese men reporting the highest proportion of beer drinkers. Generally, there tended to be less beer consumption among the older men.

While beer was not so popular among women, a similar relationship was found between age and the proportion of beer drinkers, except for women in Hawaii. Women under 30 represented the highest proportion of beer drinkers in Japan and Santa Clara County, but the highest proportion of beer drinkers among women was concentrated in the 50 to 59 age bracket in Hawaii. The proportion of beer drinkers across the rest of the age groups among women in Hawaii was similar to the other sites.

In terms of spirit consumption, as expected, gender differences were noted within study sites and across age groups. More Japanese men than women reported consuming liquor. The largest differences between males and females were found in the age groups between 25 and 39, while the proportions of men and women ages 50 and older who consumed liquor were similar. Among the Japanese Americans from Santa Clara County, spirit consumption among men under the age of 25 and over the age of 40 was higher than among women of similar age. However, more women than men in the 25- to 39-year-old group drank spirits.

The Japanese Americans from Oahu showed a unique spirit consumption pattern. More women than men in Oahu reported spirit consumption. Furthermore, the proportion of spirit consumers among women under 25 in Oahu was the highest among either men or women across all other sites. In addition, more women than men consumed spirits in almost all age groups. It is noteworthy that half of the women over the age of 60 reported spirit consumption.

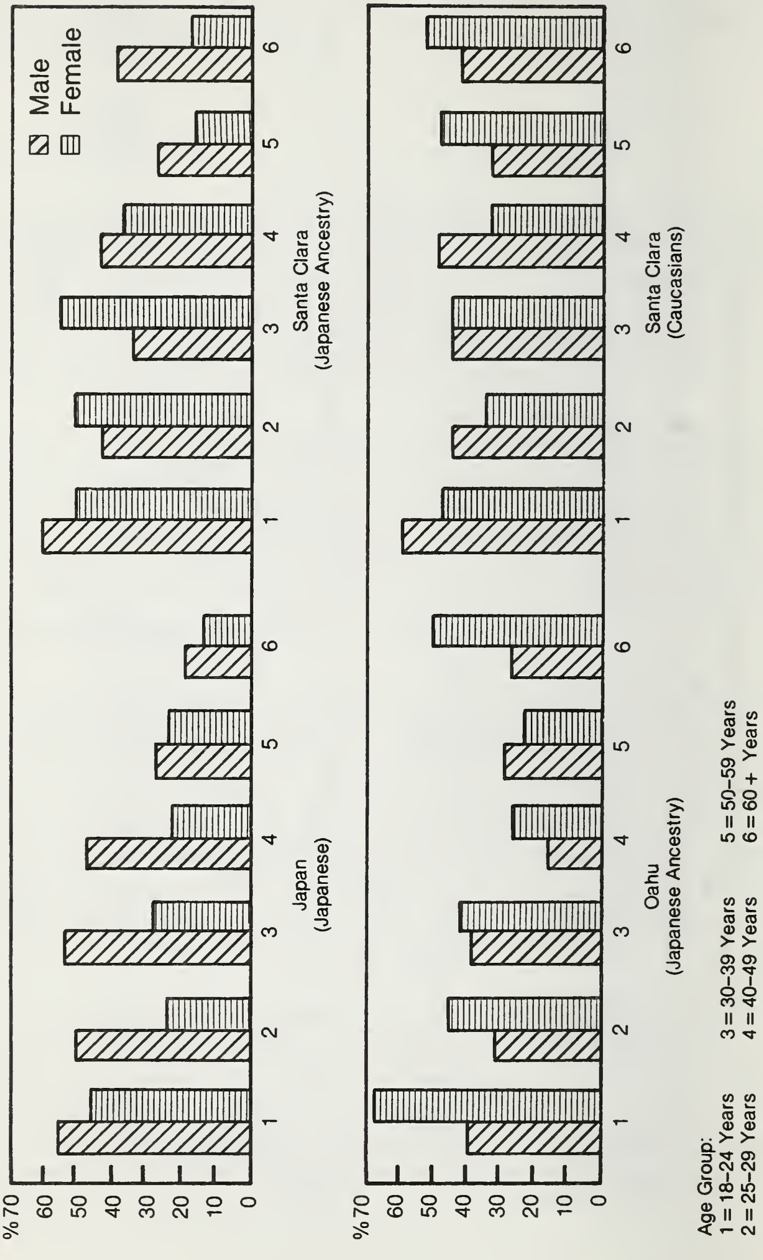
Figure 3.—Beer consumption among current drinkers by age and sex*



Age Group:
1 = 18–24 Years
2 = 25–29 Years
3 = 30–39 Years
4 = 40–49 Years
5 = 50–59 Years
6 = 60 + Years

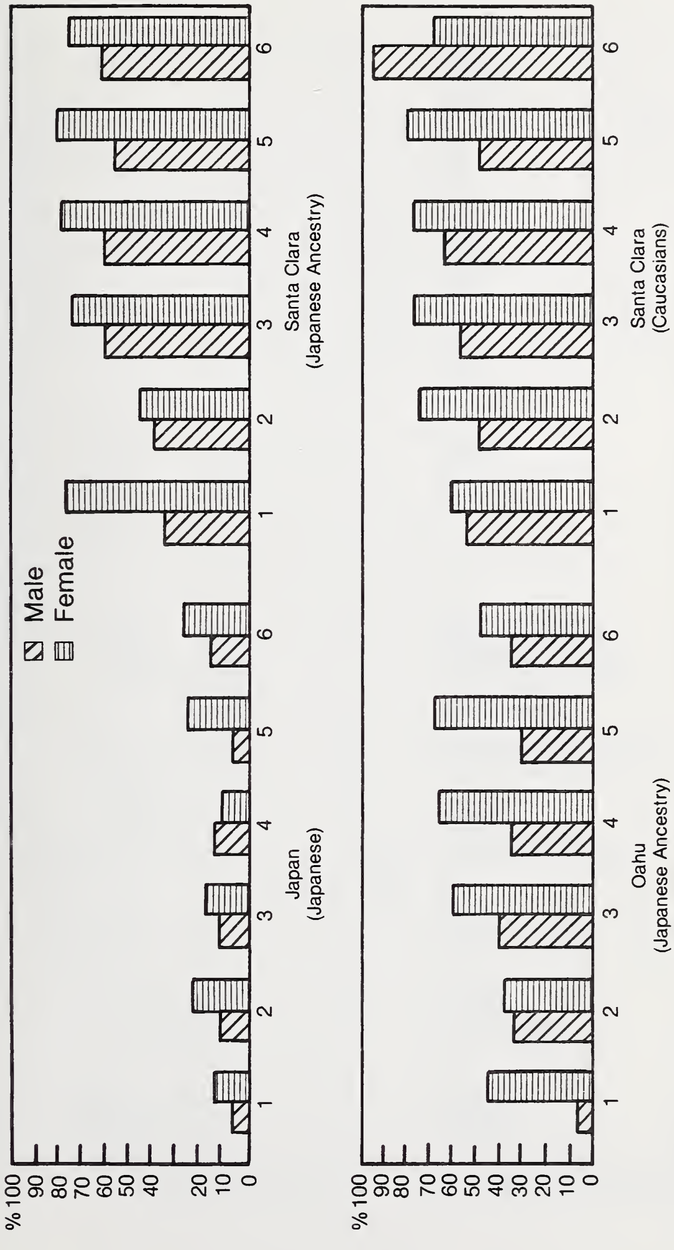
*Percent weighted for the U.S. samples

Figure 4.—Consumption of spirits among current drinkers by age and sex*



*Percent weighted for the U.S. samples

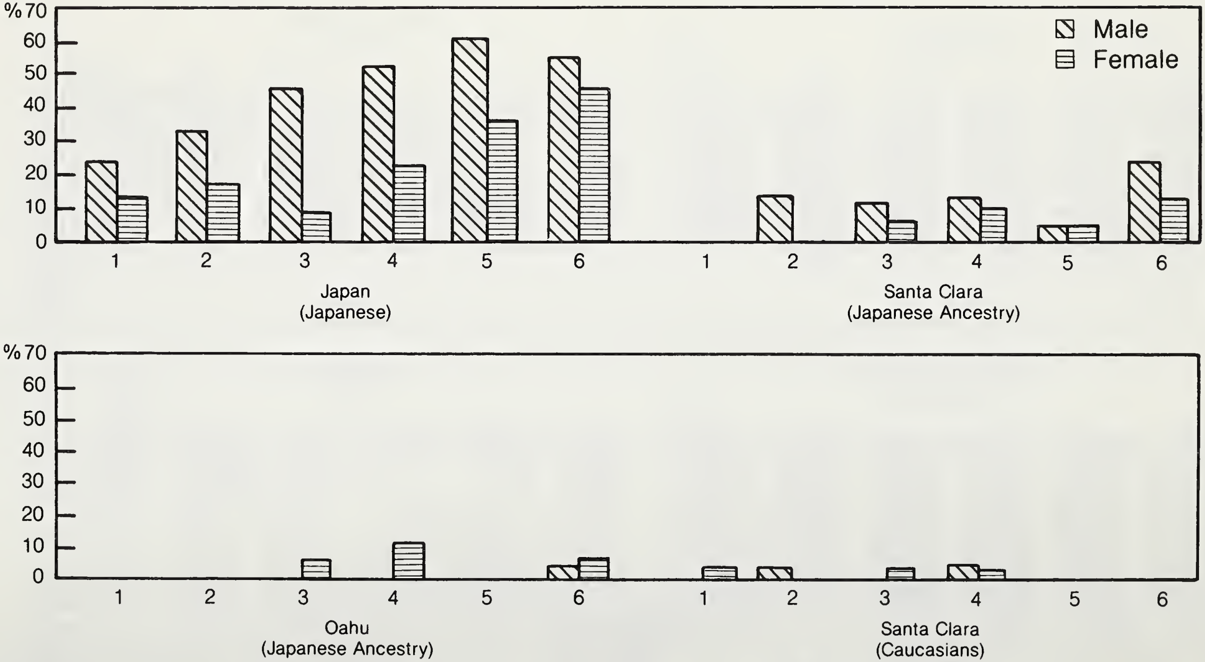
Figure 5.—Wine consumption among current drinkers by age and sex*



Age Group:
1 = 18–24 Years
2 = 25–29 Years
3 = 30–39 Years
4 = 40–49 Years
5 = 50–59 Years
6 = 60 + Years

*Percent weighted for the U.S. samples

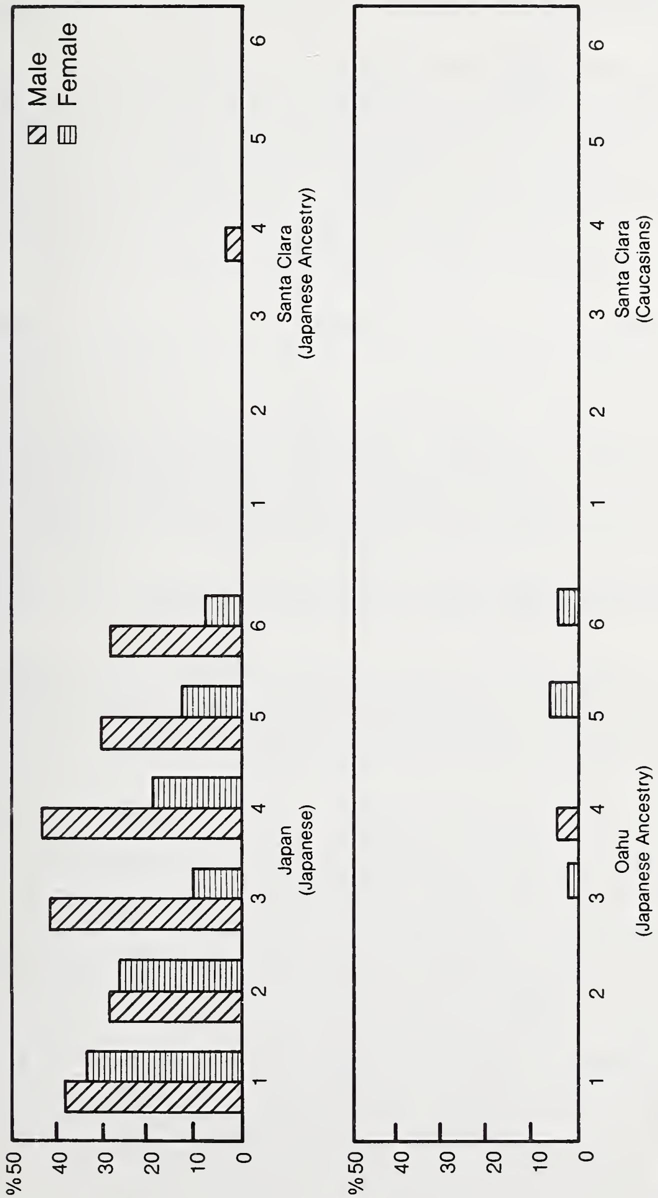
Figure 6.—Sake consumption among current drinkers by age and sex*



Age Group:
1 = 18–24 Years
2 = 25–29 Years
3 = 30–39 Years
4 = 40–49 Years
5 = 50–59 Years
6 = 60 + Years

*Percent weighted for the U.S. samples

Figure 7.—Shochu consumption among current drinkers by age and sex*



Age Group:
1 = 18–24 Years
2 = 25–29 Years
3 = 30–39 Years
4 = 40–49 Years
5 = 50–59 Years
6 = 60 + Years

*Percent weighted for the U.S. samples

Among the Caucasian sample, more spirit drinkers were found among men than women in the under 30 and 40-49 age groups. The rate of spirit drinkers was the same for men and women in their thirties and those over 60, while more women than men in their fifties reported drinking spirits.

The proportion of wine drinkers was the lowest among Japanese men and women, while the highest rate of wine drinkers was found among Caucasians and Japanese Americans in Santa Clara County. In addition, more women than men reported drinking wine within the last 12 months across all age groups at all four sites. The only exception to this was Caucasians 60 or older in Santa Clara County. In that group, more men than women reported drinking wine during the 12 months before the interview.

While a sizable number of sake and/or shochu consumers were found among Japanese men and women, only a very small portion of Japanese Americans in Santa Clara County and Hawaii reported consuming these beverages. Sake was most frequently consumed by older Japanese men and women, resulting in a positive relationship between age and rates of sake consumption. Shochu was popular among the younger men and women (under 30) and among males in their thirties and forties in Japan.

Typical Amounts of Alcohol Consumption

In order to compare the average amounts of absolute alcohol consumed by drinkers in a 2-week reporting period, the assumptions shown in table 1 were made concerning bottle sizes and the alcohol content of the various beverages.

An examination of the total amount of alcohol consumed revealed that the Japanese men reported drinking substantially more alcohol than respondents in any of the U.S. samples. This finding is puzzling since U.S. tax data indicate that much more alcohol is sold per capita in the United States than in Japan. One method of illustrating the magnitude of this puzzle is to calculate the percentages of alcohol sold in the respective locales that is "accounted for" by respondents' reports of alcohol use. Doing so requires several assumptions. First, the U.S. tax agencies report data only for individual States, but the data are reported for Japan as a whole (at least in the data we have). We must make the assumption that our samples of respondents are much like the total populations of their respective State or nation. This is not likely, but we must do this to proceed. Second, we assume that drinking reported by the respondents in the last 2 weeks preceding the

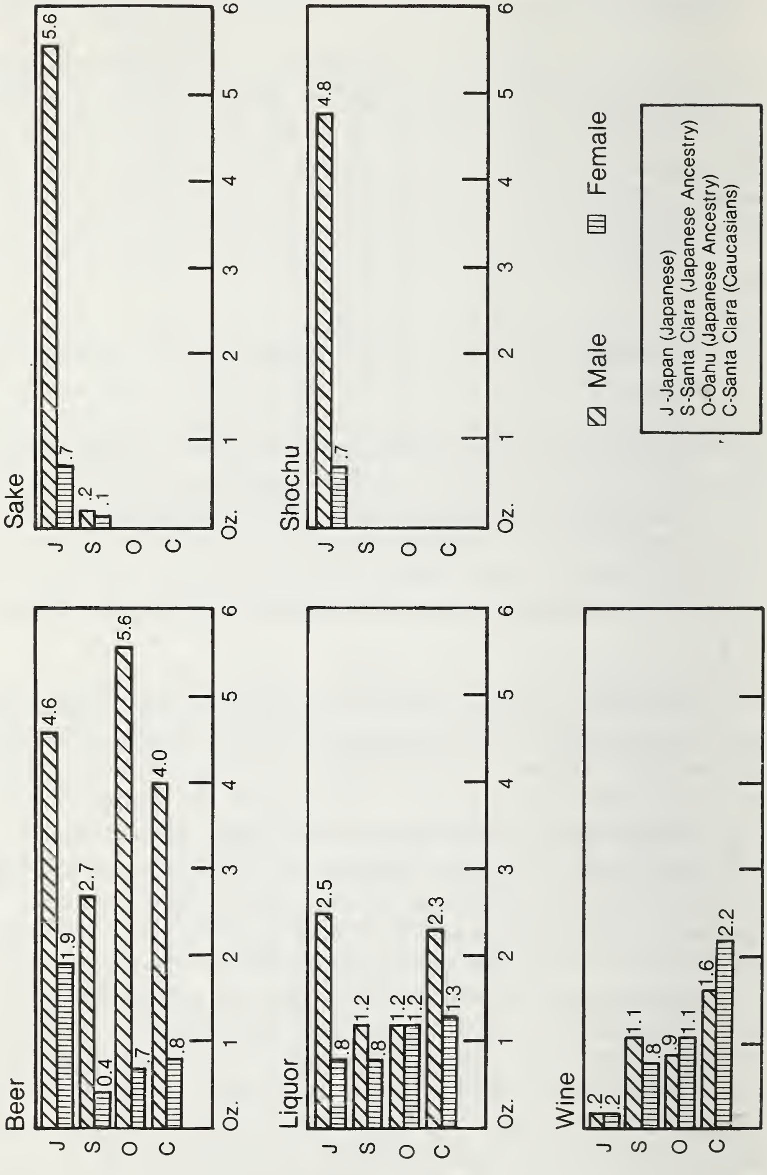
Table 1.—Assumptions about bottle size and alcohol content

	Japan		United States	
	Size per drink (in ounces)	Percent alcohol	Size per drink (in ounces)	Percent alcohol
Beer	21.0	4.5	12.0	4.0
Spirits	1.0	43.0	1.25	45.0
Wine	3.8	12.0	4.0	12.0
Sake	6.0	16.0	6.0	12.0
Shochu	6.0	25.0	6.0	20.0

interviews was typical of their drinking over the course of the previous year. Again, this may not be likely at all but is necessary for this presentation. Third, some smaller assumptions were made in the data to adjust for the ages assumed by the tax agencies in their calculations of per-capita consumption. Their age range differed from that of the survey data. These adjustments are of lesser importance than the other assumptions noted above.

The results indicate that the Japanese survey data account for 84 percent of alcohol reported sold by the tax agency, while the corresponding figure for Caucasians in California is only 30 percent and for Americans of Japanese ancestry on Oahu only 23 percent. These figures are disappointing; surveys in the United States commonly account for larger proportions (50 percent to 70 percent) of alcohol sales than we have done here. Only once has a survey accounted for a higher proportion of sales data, in a study of young men in the U.S. Air Force (Polich and Orvis 1979). We should note here that we do not believe that the people of Japanese ancestry on Oahu consume as much alcohol as the "average" Hawaiian, nor do the Caucasians in Santa Clara County match the average for California. The problem remains that reported consumption in Japan and reported alcohol problems are consonant and too high to be directly compared to the U.S. data. The U.S. figures may in fact be too low. Figure 8 shows the ounces of absolute alcohol consumed by current drinkers by beverage type. The largest amount of beer was consumed by Japanese-American men in Oahu, followed by men in Japan and Caucasian men in Santa Clara County. The

Figure 8.—Ounces of absolute alcohol consumed during 2 week period by current drinkers



smallest amount of beer consumed by men was reported by the men of Japanese ancestry in Santa Clara County. Women at all sites consumed less beer than the men, with Japanese women reporting the highest amount of beer consumption. The amount of spirits consumed was similar for Japanese men and Caucasian men in Santa Clara County. The amount of spirits consumed by men of Japanese ancestry in Santa Clara County and Oahu was less than half of this amount. Women generally consumed lesser amounts of spirits than men except in Oahu, where men and women consumed similar amounts. The largest amount of spirit consumption among women, however, was reported by Caucasian women. On the other hand, Japanese women reported only a small amount of spirits consumed.

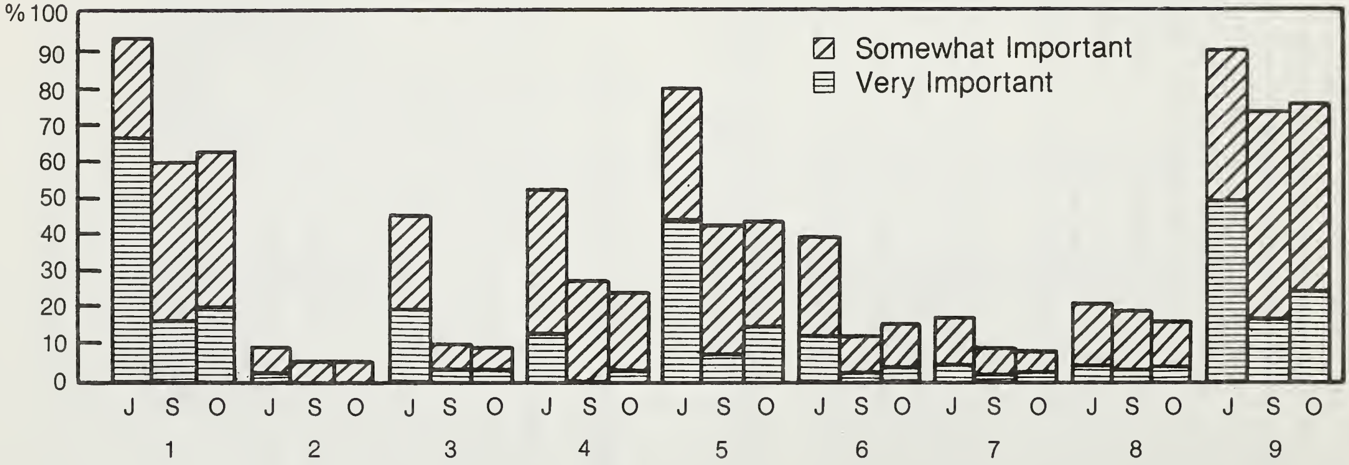
The highest amounts of wine were consumed by the Caucasian men and women in Santa Clara County. Unlike the other types of beverages surveyed, women consumed as much or more wine than men at all sites except for women of Japanese ancestry in Santa Clara County. These women consumed smaller amounts of wine than Japanese American men. A very small amount of wine was consumed by Japanese men and women.

Sake and shochu were consumed almost exclusively by the Japanese. The amounts of sake and shochu consumed were much higher among men than among women in Japan.

Reasons for Drinking Among Current Drinkers

Possible reasons for drinking alcoholic beverages were assessed at three of the four sites. Respondents in Japan and Americans of Japanese ancestry (but not Caucasian respondents) were asked to indicate whether each of the nine reasons shown in figure 9 was a very important reason, a somewhat important reason, or not really an important reason for their drinking. Only current drinkers are included here, though the questions were asked for all respondents who ever drank. The figures for the total samples in each site are presented. However, the male and female respondents do differ in their responses to the questions about reasons for drinking, and the differences seem to have to do with the relative amounts of alcohol consumed by men as compared to women. In general, the more drinking the more reasons offered for drinking. Men reported relatively more alcohol use at each site, and they reported more reasons for drinking. The Japanese sample in comparison to either sample of Japanese Americans, reported relatively more of the reasons for drinking were either very important or somewhat important in terms of their own drinking. In response to "drinking is a good

Figure 9.—Reasons for drinking among current drinkers in three populations*



Reason Number:
1 = Good Way To Celebrate
2 = Nothing Else To Do
3 = Part of a Good Diet
4 = Like Feeling High/Drunk
5 = Most Friends Do
6 = Forget Worries
7 = Gives Me Confidence
8 = When Tense or Nervous
9 = To Be Sociable

J -Japan (Japanese)
S-Santa Clara (Japanese Ancestry)
O-Oahu (Japanese Ancestry)

*Percent weighted for the U.S. samples

way to celebrate," almost all Japanese men and women (94 percent) reported this to be a very important or somewhat important reason for their drinking, as compared to 60 percent of the Japanese Americans in Santa Clara County and 63 percent in Oahu.

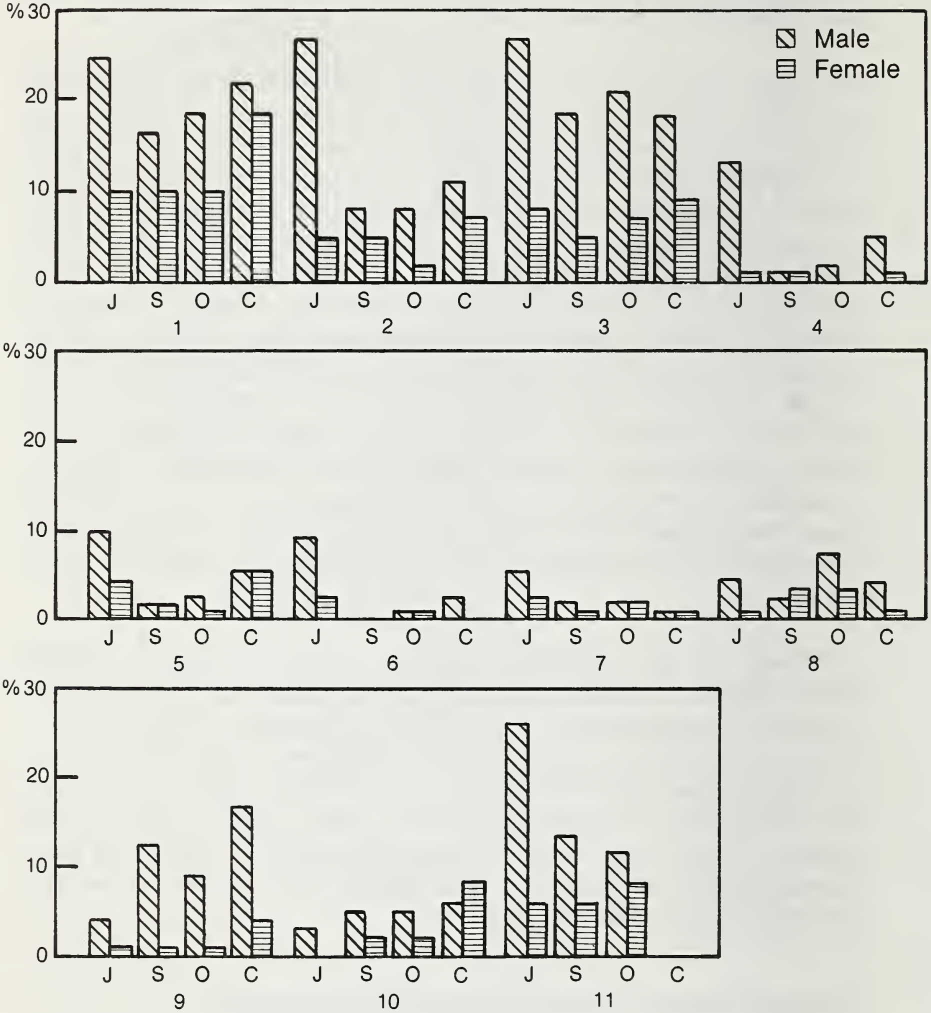
The sample from Japan also reported that "drinking is part of a good diet" significantly more often than either of the other samples. Responses concerning "liking the feeling of getting high or drunk" indicate that about half of the Japanese sample felt that this was a very or somewhat important reason for their drinking. Only about a fourth of the samples in the United States gave this response. Nearly half of the Japanese sample reported that "drinking is what most of my friends do when we get together" as a very important reason for their drinking as compared to 7 percent from Santa Clara County and 14 percent of respondents on Oahu. Similarly, significantly more Japanese than Japanese Americans said that "drinking helps me to forget about my worries and my problems," or "drinking gives me more confidence and makes me sure of myself" as important reasons for their drinking. Respondents in Japan compared to Hawaii identified "drinking to be sociable" as an important reason for doing so; and more subjects in Hawaii than in Santa Clara County found this at least a somewhat important reason for their drinking. (All these differences are statistically significant.)

Two items did not discriminate between the three samples: "drinking because there isn't anything else to do" and "I drink when I feel tense and nervous." Few respondents felt these were important reasons for their drinking. It should be noted that positive responses to both of these items are positively associated with the amount consumed. Heavier drinkers are much more likely to report drinking for these reasons than are light drinkers. These items do not appear to be useful in comparing cross-national patterns of reasons for drinking but may be of value in characterizing heavy or light consumption patterns.

Rates of Various Alcohol-Related Problems

Figure 10 presents the frequency of drinking-related problems reported by respondents at all four sites. The problems reported here are all current, that is, they occurred in the 12 months preceding the interviews. Similarly, only current drinkers are included in the denominators.

Figure 10.—Rates of various drinking problems among current drinkers by sex*



Reason Number:
1 = Felt Need To Cut Down
2 = Blacked Out
3 = Advised To Cut Down
4 = Morning Drinking
5 = Reqretted Later
6 = Being Warned by Doctor
7 = Drank Instead of Meals
8 = Got Drunk When Needed To Be Sober
9 = Trouble With Law
10 = Job Troubles
11 = Felt Effects While at Work

J -Japan (Japanese)
S-Santa Clara (Japanese Ancestry)
O-Oahu (Japanese Ancestry)
C-Santa Clara (Caucasians)

*Percent weighted for the U.S. samples

Generally, Japanese men reported the highest rate of problems. Men also reported all problems more frequently than women. The problems most frequently reported by Japanese men were "blackouts" (27 percent), "felt effects of drinking while at work" (27 percent), "being advised by others to cut down" (27 percent), and "felt need to cut down" (25 percent). Two of the above-mentioned items were also frequently reported among the other samples—"felt should cut down," (22 percent Caucasians, 18 percent Japanese Americans in Oahu, and 15 percent in Santa Clara County), and "being advised by others to cut down" (18 percent Caucasians, 21 percent Oahu, and 18 percent Santa Clara County). The remaining two problems were less frequently reported among the men of Japanese ancestry in Santa Clara County as well as in Oahu, compared to the Japanese men. "Morning drinking," "being warned by doctor," and "being ashamed of something done while drinking" were other items reported frequently by Japanese men but not by men at the other sites. The rates of problems reported among the women across the different sites are similar, except for the Caucasian women. Twice as many Caucasian women as women at the other sites reported a "need to cut down" and "job difficulties." Although the Japanese men reported the highest total number of problems, a few exceptions were found for specific items. Caucasian men and men of Japanese ancestry in Santa Clara County most frequently reported "trouble with authorities." Men of Japanese ancestry in Oahu also reported a high rate of this problem but less than those men in Santa Clara. However, neither the Japanese nor the other respondents reported loss of control, physical dependence, or accidents that are usually indicative of more serious drinking problems.

Rates of drinking problems were positively correlated with the amount of alcohol consumed during the 2 weeks prior to the interview at all sites; i.e., the higher the amount consumed, the higher the rate of alcohol-related problems. Further, the strength of the association between the amount consumed and the number of drinking problems reported is similar across the four study sites. This indicates the consistency of the findings despite differences in the amount and frequency of alcohol consumed at the four sites.

Discussion

This report describes alcohol consumption patterns and drinking problems among four different samples: Japanese, Japanese Americans in Santa Clara County and Oahu, and Caucasians in Santa Clara County, California.

The results, considered separately, are consistent with the findings of general population surveys. Men more often drink and are heavier drinkers than women. Reports of problems were related to level of alcohol use, i.e., heavier drinkers reported higher rates of problems. While the average amounts of alcohol consumed differ at the four sites, the relationships between alcohol consumption and reported problems were consistent across the four sites. One unexpected finding is that Japanese men drank much more frequently, drank in greater amounts, and reported more problems than did men at the three other sites. While the reported consumption in Japan was higher than that of the three other sites, the U.S. per-capita consumption estimated from the alcohol sales data is higher than that of Japan. A comparison of the survey data on alcohol consumption compared to the tax data on alcohol sales indicates that the Japanese survey data account for 84 percent of the alcohol reported sold by the tax agency, while the corresponding figure for Caucasians in California is 30 percent and for Americans of Japanese ancestry on Oahu only 23 percent.

Several factors can be hypothesized to account for this finding. Several assumptions had to be made in order to compare reported consumption with the tax data. Since the tax agencies report data only for whole States in the United States and for Japan as a whole, we must assume that the respondents in the study sample are representative of the population in their respective State or country. This is unlikely to have been true. A second assumption is that the drinking reported by the respondent during the 2 weeks preceding the interview was typical of their drinking habits over the past year. It is difficult to validate this, but the assumption has to be made. In addition, the tax data are not for the same year in which the survey was conducted. Another assumption must be made regarding the method of age adjustment. The average age assumed by the tax agencies in their calculations of per-capita consumption differs from the average ages in the survey data. While these assumptions were likely to have had some influence on the results of the present study, a specific test of validity of the findings of this study awaits future collaborative projects involving Japanese and U.S. scientists.

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Alcohol Consumption of Japanese in Japan, Hawaii, and California

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James Lubben,[4] *and Si-yun Rhee*[5]

Studies of ethnic groups are generally restricted to a geographic area. The major problem is an economic one—research in multiple sites is expensive. In addition, there are issues of sampling, problems of access, of recruitment, and community cooperation. As a result, generalizations concerning an ethnic group are often based on findings from one site, with the assumption that ethnic experiences are generally similar. There are probably behaviors that are not affected greatly by geographic area (values, family roles), but it is our belief that other behaviors such as alcohol consumption are closely tied to local environments.

The purpose of this study was to compare alcohol consumption patterns of Japanese Americans residing in different areas. The sites were Oahu, Santa

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Clara County (south of San Francisco), and Los Angeles, California. A sample of Caucasians residing in Santa Clara County was also a part of the study. These samples will ultimately be compared to samples drawn from three sites in Japan where almost identical questions were asked.

The theoretical thread was that of cultural styles, assimilation, and acculturation: can the patterns of alcohol consumption be traced from Japan, the home country, to Japanese Americans living in various parts of the United States? The basic hypothesis was that of differential consumption by site; Hawaiian Japanese-Americans live in an area where they are close to majority status and are closer culturally to the mother country than are Japanese Americans living in Los Angeles and Santa Clara. Therefore, we believe that their alcohol consumption patterns will most closely resemble that of Japan. The pattern of alcohol consumption in Los Angeles, with a large but scattered Japanese American population, will be expected to fall in-between Hawaii and Santa Clara County. Alcohol consumption was expected to be the closest to the Caucasian pattern in Santa Clara, where the Japanese community is small, scattered, and relatively more integrated into the dominant community than the other areas.

This study concentrated on the three American sites, since a separate analysis is being conducted on the data from Japan. However, we will present overall alcohol consumption data from Japan. We will provide data on the patterns of alcohol consumption by site, test for significant differences, and develop models for predicting (a) drinkers and abstainers and (b) heavy drinkers and less heavy drinkers. We expect to find differences by area in drinking behavior.

Background

This study stems from a 1980 statement of agreement between U.S. Department of Health and Human Services officials and officials from the Japanese Ministry of Health and Welfare to conduct a variety of alcohol-related investigations. In 1982, officials from the Japanese Ministry of Health and the U.S. National Institute on Alcohol Abuse and Alcoholism entered into a joint project designed to compare the patterns of alcohol use between Japanese and Japanese Americans. The aim of the study was to look for cross-cultural differences in the levels of alcohol consumption, to analyze the patterns of consumption, to assess problems related to alcohol, and to look for better societal responses concerning treatment of alcohol-related problems.

Samples

Santa Clara County

Cities covered in Santa Clara County were Morgan Hill, Gilroy, San Jose, Santa Clara, Los Altos, Mountain View, and Sunnyvale. A community relations effort was mounted prior to the study, which involved contacting ethnic leaders and community organizations, running articles in the press, and obtaining the cooperation of Congressman Norman Mineta, a representative from the area. Obtaining strict probability samples of Japanese Americans in Santa Clara County was not feasible, since screening out 2 percent of eligible respondents would have been too costly. The technique used was to contact a random sample of Japanese-sounding surnames from the telephone directory in order to arrange for individual interviews. Similarly, a random digit dial sample of phone numbers in the same county generated a comparison sample of "Caucasians," that is, those who did not identify themselves as Asian, black, Hispanic, or Native American.

The Japanese American sample was interviewed by trained interviewers of the same ethnic background. The questionnaire was available in both English and Japanese; the great majority of the respondents preferred the English version. The Caucasian sample was interviewed solely by telephone with a shortened version of the survey instrument.

There were 516 completed interviews of the Japanese American sample. The refusal rate was 31.5 percent (237 refusals). The response rates were considered adequate; there was no economical way of ascertaining the representativeness of the sample.

The Caucasian sample included 526 (61.8 percent) successful interviews, with 325 (38.2 percent) refusals.

Oahu

Preparation procedures similar to those of Santa Clara County were conducted in Hawaii. A random digit dialing procedure based on the three areas of Oahu with at least 30 percent Japanese residents based on the 1980 census (City of Honolulu, running from Koko Head in the east to Pearl City in the west, including Aiea, Kaneohe, and Wahiawa) was used to contact individuals for interviews. Of the successful 2,439 contacts, 1,065 (43.7 percent) refused to identify their ethnicity; 860 (35.2 percent) refused to be interviewed, and 514 (21.1 percent) were successfully interviewed. The study was conducted by a private research firm headed by a Japanese researcher who also taught at the University of Hawaii. While the response rate is low, it was considered average for surveys conducted in Hawaii. It is also interesting to note the very high number of people who refused to identify their ethnicity.

Japan

Four areas of Japan were sampled in the survey. They were Sapporo city and the surrounding rural area on the island of Hokkaido; Shizuoka city and the surrounding rural area; Suita city (a suburban community of Osaka), and Kochi city and the surrounding rural area on the island of Shikoku. The combined total number of interviews for the four areas was 1,225, including 579 males and 646 females. Only the combined totals are presented in this paper.

Los Angeles

The Los Angeles survey was conducted separately from the two previous studies. The goal of this project was to compare Japanese American drinking patterns with the Chinese, Korean, and Pilipino Americans. The format was similar—community preparation, bilingual personnel, a survey instrument in two languages and the use of the telephone directory to obtain a random sample. There were 295 completed interviews; the refusal rate was low (5 percent).

Only the questions that were similar will be used in our analysis of the three sites. As a consequence, there will be tables where responses from only two of the sites will be featured.

Previous Studies

Research data concerning alcohol consumption among Japanese Americans are scarce. The general impression is that they do not drink very much and that they have few alcohol-related problems. However, Kitano et al. (1985) found that Japanese Americans had the highest proportion of heavy drinkers when compared to Chinese, Koreans, and Pilipinos in Los Angeles. Heavy drinking in all of the Asian American groups was a male activity. Sex, motives for drinking, drinking stigma, and age were significantly related to drinking behavior (Kitano and Chi 1986-87).

A study by Chu et al. (unpublished) found that Japanese American families were permissive toward drinking but that there were generational differences, with the Issei, or first-generation immigrants, being the least permissive. The heaviest drinkers were middle-aged Nisei second-generation males, of whom many grew up in World War II concentration camps, those who had served in the Armed Forces, and professionals such as lawyers and businessmen who regarded drinking as necessary to their work. Gambling was hypothesized as a possible substitute for drinking. There was little drinking in the female population.

Kotani (1982), in a number of articles in the *Hawaiian Herald*, found that in a 1979 Hawaiian substance abuse survey, heavy drinking, defined as having the equivalent of four beers or more per day, was found in the following groups: Caucasians, 40.6 percent; Hawaiians, 19.4 percent; Japanese, 11.4 percent; and Chinese, 2.2 percent.

A study by Johnson et. al (1987) comparing the drinking behavior of a variety of Hawaii's ethnic groups supports the idea of the importance of cultural norms as determinants of the level of alcohol use. The incidence of alcohol use was less for Caucasians born in Hawaii than those born on the mainland, but it was more than for Chinese, Pilipinos, and Japanese born in Hawaii. They also indicate that immigration per se does not seem to create social disorganization that leads to alcohol use.

There were similarities in the function of drinking between the Japanese in Japan and those in Hawaii. Kotani cites Bickerton's study of drinking among the Japanese in Hawaii where alcohol was perceived as the social cement that binds individuals together, rather than as a vehicle to satisfy individual needs or to alleviate frustrations. Similar explanations can also be found in Japan. Ceremonies are also occasions for drinking, and hosts often feel insulted when guests do not drink (Kotani 1982).

Japan

The current Japanese style of drinking reflects a number of streams. Prior to World War II, the Japanese drank alcoholic beverages, but the incidence of alcoholism was rare (Chafetz 1964). Shinto and Buddhist teachings provided clear prescriptions for drinking by age, sex, and family role. Drinking was sanctioned, but only in moderation. Since the end of World War II, the influence of America and rapid industrialization and urbanization have brought about changes in the culture, including rising rates of alcohol consumption. For example, Nukada (1972) reported that between 1951 and 1970, the annual per-capita consumption of alcohol rose from 1.4 to 4.7 liters. Cirrhosis deaths rose from 5,678 in 1950 to 13,564 in 1972 (Gedig and Gedig 1977).

A survey by the Health and Welfare Ministry (*Hokubei Mainichi* 1981) indicated that over 37 percent of Japanese males reported drinking every day, compared to 32.1 percent in 1966. Suwaki (1985) reported that the average rate of alcohol consumption increased twofold from 1955 to 1980, while Kono (1985) indicated that the increase in alcohol consumption has led to an increasing number of alcoholic liver diseases. Sargent (1971) theorized that Japanese drinking was being transformed from a convivial pattern to a self-oriented style, with modern Japanese drinking to relieve anxiety and tension. It is also important to note that much of Japanese drinking is related to occasions—dinner, ceremonies, meetings, conventions, after business hours, and among close friends (Ohashi and Nishimura 1978; Kitano 1985). The overall generalization concerning drinking in Japan is that (a) it has increased, (b) it is primarily a male activity, and (c) it is often related to social and business activities.

There is currently concern about drinking in Japan, since alcohol consumption has spread to women and young adults. Drinking behavior has also become more "modern," that is, less tied to the traditions and ceremonies of the past. Liquor, other than the more traditional Japanese beverages, has also become more popular, so that the meaning, setting and effects of alcohol consumption may be changing.

Treatment

Research on the treatment of alcohol-related problems is difficult to find, both in Japan and the United States. Holmgren (1976) mentions that the Japanese in Japan hold a laissez faire attitude toward drinking as well as most social problems. Alcoholics are generally shielded by their families and go for treatment only in the latter stages of their affliction. A similar generalization is appropriate for Japanese residing in America.

Japan has its own version of Alcoholics Anonymous, called "danshyukai." In a speech reported in the Roche Report (1982), Fukuda stated that the fight against alcoholism features efforts by doctors, the local government, and clubs. Fukuda reported that in a followup study, 27 of 56 patients who joined a club were leading normal lives, while of 54 patients who did not participate in treatment, only one was leading an alcohol-free existence.

It is interesting to note that of the 110 alcoholic patients studied by Fukuda, 89 percent had a clinical history of physical or mental disorders of one kind or another. The picture is that of individuals less integrated into the ongoing Japanese social structure. Similarly, Kotani's (1982) case study of a Japanese American alcoholic in Hawaii and Kitano's (1985) case studies of Japanese Americans in Los Angeles also show alcoholics as individuals less integrated into the family and community structures.

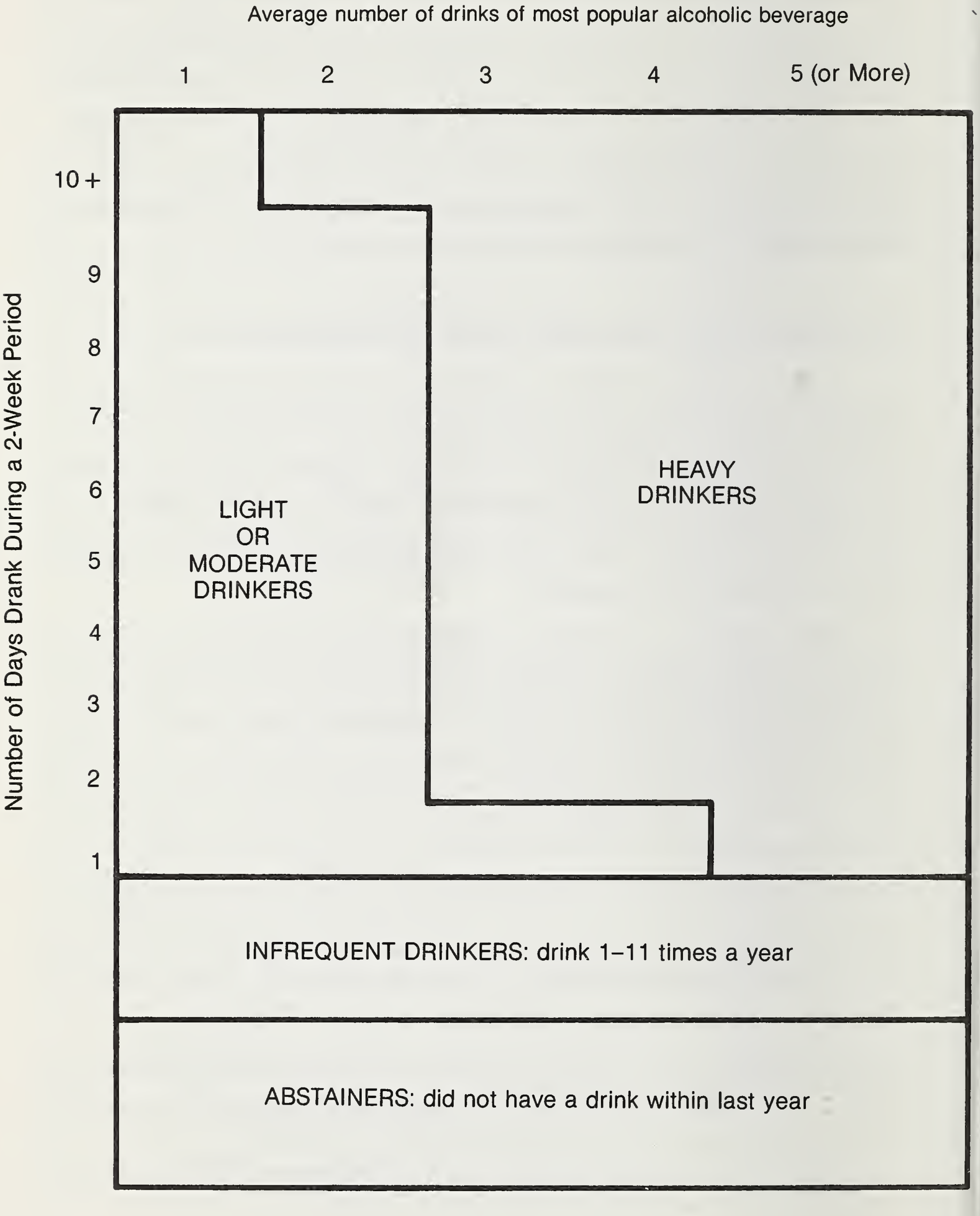
The Dependent Variable, Alcohol Consumption

One of the most important areas concerning cross-cultural and cross-area research in alcohol is that of comparable drinking scales. We developed a modified drinking scale (MQF) based on two aspects of drinking behavior, quantity and frequency. The dimension of variability, which was part of the original Cahalan and Cisin (1976) scale could not be used because the Japan, Oahu, and Santa Clara study did not include this measure. The Los Angeles study included variability.

There were four levels of drinking using the MQF—abstainer, infrequent, light/moderate, and heavy. The abstainer was one who had not had a drink in the past year; the infrequent drinker was one who consumed some alcohol during the past year but did so only once a month or less. The light/moderate category included those who had consumed alcohol during the 2-week period preceding the interview in one of three patterns. One pattern was that of a drinker who consumed no more than one drink on any given day; another pattern was a person who consumed up to two drinks on a given day, but only on 9 or less days during the 2 weeks preceding the interview. The final pattern was that of a person who may have consumed up to four drinks a day, but did so only once during the 2-week reference period.

The heavy drinker was one who consumed more than the light/moderate drinker. The typical heavy drinker was one who consumed three or more drinks on at least 2 days during the period preceding the interview. The model for differentiating between the drinkers is shown in figure 1.

Figure 1.—UCLA study group's modified QF scale of drinking behavior


Average number of drinks of most popular alcoholic beverage
1
2
3
4
5 (or More)
Number of Days Drank During a 2-Week Period
10 +
9
8
7
6
5
4
3
2
1
LIGHT OR MODERATE DRINKERS
HEAVY DRINKERS
INFREQUENT DRINKERS: drink 1–11 times a year
ABSTAINERS: did not have a drink within last year

Findings

Prior to a presentation of alcohol consumption, we will present data on what has become commonly referred to as the Oriental flushing reflex. There have been a number of studies that demonstrate a reaction to alcohol, such as rapid heartbeat, nausea, feeling itchy, perspiration, and headaches, which is much more common among those of Asian ancestry than those of Caucasian ancestry (Wolff 1973; Cohen 1979). Ewing et al. (1974) concluded that physiological factors were responsible for the sensitivity of the Chinese and Japanese to alcohol, whereas Cohen (1979) reported that the precise cause is unknown but may be due to the accumulation of acetaldehyde in the body.

The flushing reaction has lead some to conclude that one of the main reasons for the lack of alcohol-related problems in Asian communities is the built-in regulator against excessive drinking. The logic is, why would anyone want to drink when its immediate effects include the various phases of the flushing reflex?

Table 1 shows the results of the survey between Japanese in Japan, Japanese Americans in Santa Clara and Oahu, and Caucasians in Santa Clara. It is clear that Asians, whether in Japan, Oahu, or Santa Clara, reported significantly more flushing than the Caucasian sample. The rate of flushing in Japan is significantly higher than the flushing rates (only facial flushing was used in the analysis) of their counterparts in the United States. It is also interesting to note that the Japanese American samples show almost identical results.

Table 1.—Flushing reflex by site: Japan, Santa Clara, and Oahu, in percent

	Japan	Santa Clara		Oahu
	Japanese N=1,049	Japanese Americans N=409	Caucasians N=438	Japanese Americans N=377
Flushers	42	29	4	30
Nonflushers	58	71	96	70

Chi-square=$p<.001$

The question of the effects of flushing on drinking behavior was mixed. In the case of frequency of drinking, those who reported flushing immediately on drinking reported less frequent drinking than the nonflushers. Frequency of getting drunk was also negatively correlated with the flushing reaction, but the question of "feeling the effects without becoming drunk" did not show any significant difference between flushers and nonflushers. Among the Japanese Americans in both samples, the large majority of both flushers and nonflushers indicated that they could continue to drink. A similar finding was found among the Caucasian group, although the small number of flushers limited the results.

In general, the results indicated that significantly more Japanese and Japanese Americans react to alcohol with a flushing reflex than Caucasians, but its effect on drinking behavior remains mixed.

Drinking Behavior by Site

Table 2 shows the male pattern of drinking by MQF for Japan, Hawaii, Santa Clara, and Los Angeles. There are significant differences in alcohol consumption by site; heaviest drinking is in Los Angeles, followed by Japan, Caucasians in Santa Clara, and Japanese Americans in Hawaii and Santa Clara. Since the Los Angeles data were gathered in a separate study, the results may not be strictly comparable with the other sites.

The rank order of light/moderate drinkers was as follows: Japan, Caucasians, Santa Clara, Hawaii, and Los Angeles. The rank order for infrequent drinkers was Santa Clara, Los Angeles, Hawaii, Caucasians, and Japan, while the rank order for abstainers was Hawaii, Santa Clara, Los Angeles, Caucasians, and Japan.

Table 3 shows female drinking patterns by site. The heavy drinking patterns was as follows: Los Angeles, Caucasians, Hawaii, Santa Clara, and Japan. The light/moderate pattern was Caucasians, Los Angeles, Santa Clara, Japan, and Hawaii. The infrequent drinker rank order was Hawaii, Santa Clara, Japan, Caucasians, and Los Angeles, while the abstainer pattern was Japan, Hawaii, Los Angeles, Santa Clara, and Caucasians.

Comparison by Site

An analysis between sites for both males and females indicated statistically significant differences at better than the .001 level. For example, Santa

Table 2.—Male alcohol consumption patterns in Japan, Hawaii, Santa Clara, and Los Angeles, in percent

	Japan	Hawaii	Santa Clara	Santa Clara Caucasian	Los Angeles	Total
N	579	271	302	199	235	1,586
Abstainer	9.4	20.8	18.5	12.7	13.5	17.3
Infrequent	14.2	22.7	28.1	17.3	25.3	19.2
Light-moderate	44.1	27.5	40.4	43.6	25.3	36.7
Heavy	32.4	29.0	12.9	26.4	35.8	26.9

Table 3.—Female alcohol consumption patterns in Japan, Hawaii, Santa Clara, and Los Angeles, in percent

N	Japan 646	Hawaii 325	Santa Clara 214	Santa Clara Caucasian 327	Los Angeles 60	Total 1,572
Abstainer	45.1	33.7	26.2	16.9	26.7	36.2
Infrequent	30.8	43.2	43.0	25.2	15.0	31.4
Light-moderate	20.3	14.0	26.6	46.5	45.0	26.1
Heavy	3.8	9.1	4.2	11.4	13.3	6.4

Clara Caucasians, both males and females, drank more than their Japanese American counterparts from the same area. Japanese Americans of both sexes in Hawaii drank more than Japanese Americans in Santa Clara. Males in Japan drank more than male Japanese Americans in Santa Clara; however, female Japanese Americans drank more than female Japanese in Japan. Japanese Americans of both sexes in Los Angeles drank more than their peers in Santa Clara, while males in Japan drank more than males in Hawaii. Female Japanese Americans in Hawaii drank more than females in Japan.

Characteristics of the Sample

Table 4 shows the characteristics of the male sample by site. Age, marital status, education, income, generation, religion, and religious activity are presented and will be used in our predictive model. We were limited to these variables because of their comparability across all sites.

Table 5 shows the characteristics of the female sample by site. The same variables as for male drinkers are presented.

Characteristics of Male Drinkers

AGE

Table 6 depicts male drinkers by site. The table excludes the abstainers; drinking patterns by age showed statistically significant differences in all sites. In Japan, in Japanese Americans in Los Angeles, and in Hawaii, male drinking is most common in the 30- to 34-year-old age group, followed by the under-30 sample. For the two samples in Santa Clara—the Caucasian and the Japanese American—drinking is most common in the under-30 group, followed by the 30- to 34-year-old category. In all groups, with the exception of Los Angeles, the least amount of drinking was in the over 60 year olds.

EDUCATION

There were significant differences within the education category for all groups with the exception of the Caucasian sample. Generally, the percentage of drinkers was higher for the most educated—the college educated had the highest numbers of drinkers.

Table 4.—Male sample characteristics by site (percentage distribution)

N=	Japan 579	Japanese—Hawaii 271	Japanese—Santa Clara 301	Japanese—Los Angeles 235	Caucasian—Santa Clara 198
Age					
<30	21.4	25.1	14.0	14.0	31.8
30-44	33.2	31.7	32.9	25.1	39.4
45-59	26.8	19.2	24.6	37.0	18.2
60+	18.7	24.0	28.6	23.8	10.6
Average age	44.5	44.0	47.1	47.5	38.0
Married	75.4	56.5	65.9	71.9	44.2
Education					
High school or less	59.8	33.9	21.2	24.7	17.4
College	34.1	42.8	47.0	53.3	50.2
Graduate school	6.1	23.3	31.8	22.0	32.5
Income (in dollars)					
0-9,999	18.3	6.1	3.6	7.6	5.8
10,000-19,999	54.3	11.4	7.9	20.3	7.4
20,000-29,999	22.2	13.9	9.6	24.5	15.8
30,000-39,999	5.2	22.0	17.5	27.8	25.8
40,000+	.0	46.5	61.4	19.8	45.2

Table 4.—Male sample characteristics by site—Continued

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Generation					
Issei (first)	n/a	6.3	9.6	23.8	n/a
Nisei (second)	n/a	33.2	46.8	22.1	n/a
Sansei (third)/more	n/a	60.5	43.5	54.0	n/a
Religion					
Buddhism	43.9	34.7	47.7	37.0	.5
Catholic	1.0	7.0	2.7	4.9	30.8
Protestant	1.4	19.9	25.2	31.3	33.8
Other	4.2	14.8	6.3	21.2	7.6
None	49.5	23.6	18.2	5.7	27.3
Religious activity					
Once a week	6.5	12.6	10.0	7.4	27.8
1-3 times/month	9.2	7.7	11.3	8.7	14.6
Less than once/month	84.3	79.7	78.5	83.9	57.6
MQFV					
Abstainer	9.4	20.8	18.5	13.5	12.7
Infrequent	14.2	22.7	28.1	25.3	17.3
Light/moderate	44.1	27.5	40.4	25.3	43.6
Heavy	32.4	29.0	12.9	35.8	26.4

Table 5.—Female sample characteristics by site (percentage distribution)

N=	Japan 646	Japanese— Hawaii 243	Japanese— Santa Clara 214	Japanese— Los Angeles 60	Caucasian— Santa Clara 326
Age					
<30	19.8	15.2	14.5	21.7	27.3
30-44	33.0	39.1	28.0	18.3	40.2
45-59	25.5	19.3	26.6	40.0	18.4
60+	21.7	26.3	30.8	20.0	14.1
Average age	45.2	45.3	48.4	47.0	39.9
Married	70.5	66.7	59.4	45.0	59.3
Education					
High school or less	69.3	35.8	30.5	44.1	32.2
College	28.8	44.4	44.1	40.8	53.4
Graduate school	1.9	19.8	25.4	15.2	14.4
Income (in dollars)					
0-9,999	21.4	8.9	9.1	17.3	6.3
10,000-19,999	45.3	11.3	10.8	32.7	16.8
20,000-29,999	22.4	21.7	14.5	23.1	17.5
30,000-39,999	10.9	15.3	12.9	11.5	15.0
40,000+	.0	42.9	52.7	15.4	44.4

Table 5.—Female sample characteristics by site—Continued

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Generation					
Issei (first)	n/a	13.8	12.6	33.3	n/a
Nisei (second)	n/a	33.3	42.5	15.0	n/a
Sansei (third)/more	n/a	52.9	44.9	51.7	n/a
Religion					
Buddhism	42.5	30.9	57.5	38.3	.0
Catholic	1.6	7.4	1.9	5.0	31.6
Protestant	1.2	30.0	27.1	33.3	42.3
Other	7.1	14.8	2.8	16.7	13.5
None	47.6	16.9	10.8	6.7	12.6
Religious activity					
Once a week	7.8	23.9	13.6	11.7	32.2
1-3 times/month	13.1	8.5	14.7	15.0	16.4
Less than once/month	79.1	67.7	71.7	73.3	51.4
MQFV					
Abstainer	45.1	33.7	26.2	26.7	16.9
Infrequent	30.8	43.2	43.0	15.0	25.2
Light/moderate	20.3	14.0	26.6	45.0	46.5
Heavy	3.8	9.1	4.2	13.3	11.4

Table 6.—Percentages of male drinkers by site and selected characteristics

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Age					
<30	94.9	83.8	92.9	87.9	93.6
30-44	96.6	87.2	88.9	98.3	90.9
45-59	91.3	80.8	86.5	79.5	80.6
60+	72.8	61.9	62.8	83.3	66.7
(χ^2), probability	(44.1)**	(15.7)**	(28.2)**	(11.0)*	(12.6)*
Marital status					
Not married	91.7	79.7	87.4	90.6	90.0
Married	90.2	78.8	78.4	84.9	83.9
(χ^2), probability	(.3)	(.0)	(3.6)	(1.3)	(1.6)
Education					
High school or less	87.9	66.7	67.2	77.8	82.4
College	96.1	85.3	85.2	86.2	91.0
Graduate school	87.1	85.7	85.4	95.7	84.1
(χ^2), probability	(9.4)**	(12.9)**	(10.9)**	(6.8)*	(2.6)
Income (in dollars)					
0-9,999	88.5	53.3	60.0	75.0	72.7
10,000-19,999	90.1	74.1	59.1	81.0	100.0
20,000-29,999	94.4	73.5	81.5	88.5	86.7
30,000-39,999	86.2	77.8	81.6	84.2	85.7
40,000+	--	85.8	84.9	92.3	91.8
(χ^2), probability	(3.4)	(10.2)*	(11.5)*	(4.0)	(6.0)

Table 6.—Percentages of male drinkers by site and selected characteristics—Continued

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Generation					
Issei (first)	--	82.4	72.4	96.4	--
Nisei (second)	--	63.2	73.8	100.0	--
Sansei (third)/more	--	87.7	91.6	76.0	--
(χ^2), probability	--	(20.7)**	(16.0)**	(24.1)**	--
Religion					
Buddhism	90.5	78.3	82.6	88.8	100.0
Catholic	100.0	89.5	75.0	54.5	90.2
Protestant	71.4	70.4	77.6	79.7	80.3
Other	91.3	77.5	79.0	95.8	93.3
None	90.9	85.9	85.5	92.3	90.6
(χ^2), probability	(3.5)	(5.6)	(1.8)	(16.1)**	(4.5)
Religious activity					
Once a week	87.5	57.7	56.0	57.1	70.0
1-3 times/month	96.2	93.3	78.6	75.0	95.0
Less than once/month	90.5	78.7	84.0	89.5	91.6
(χ^2), probability	(1.1)	(8.0)*	(11.2)**	(13.7)**	(12.0)*
Parents drink					
Either one abstains	91.6	77.2	77.4	85.2	88.9
Both parents drink	97.6	87.3	94.1	94.3	87.2
(χ^2), probability	(6.5)*	(3.0)	(9.6)**	(2.1)	(.1)

*$p < .05$
**$p < .01$

INCOME

There were significant differences by income in Hawaii and the Japanese in Santa Clara. Higher incomes meant higher proportions of drinkers.

GENERATIONS

There were significant differences in drinking by generation (generational terms were relevant only for the Japanese American samples). The patterns varied for each of the sites; in Hawaii the Nisei (second generation) drank the least; in Santa Clara it was the Issei, while in Los Angeles it was the Sansei. But in Hawaii and Santa Clara, the Sansei had the highest proportion of drinkers while it was the Nisei who had the highest number.

RELIGION AND RELIGIOUS ACTIVITY

The only significant difference in terms of religion was in the Los Angeles sample, where being Catholic was associated with the lowest proportion of drinkers. However, the degree of religious activity as measured by church attendance showed significant differences for all of the groups with the exception of Japan. Those who attended church regularly had the least number of drinkers.

PARENTAL DRINKING

There were significant differences in parental drinking in the Japanese and the Santa Clara samples. Having both parents who drank was related to higher proportions of drinkers.

There were no significant differences in terms of marital status.

Characteristics of Female Drinkers

Table 7 shows the female drinkers by site. The patterns were generally similar to those of the male drinkers.

Table 7.—Percentages of female drinkers by site and selected characteristics

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Age					
<30	71.2	83.8	87.1	100.0	86.5
30-44	69.7	79.0	88.3	81.8	84.0
45-59	52.4	63.8	80.7	62.5	84.8
60+	23.6	39.1	48.5	58.3	71.1
(X^2), probability	(77.3)**	(33.2)**	(32.7)**	(8.0)*	(5.5)
Marital status					
Not married	54.6	71.6	72.4	69.7	82.7
Married	54.9	63.6	74.8	77.8	83.3
(X^2), probability	(.0)	(1.6)	(.2)	(.5)	(.0)
Education					
High school or less	47.5	54.0	55.4	46.2	77.1
College	72.3	68.5	83.0	95.8	86.1
Graduate school	90.0	83.3	79.6	88.9	85.1
(X^2), probability	(31.9)**	(12.3)**	(16.4)**	(17.0)**	(3.9)
Income (in dollars)					
0-9,999	41.4	44.4	35.3	55.6	72.2
10,000-19,999	58.6	73.9	65.0	70.6	68.8
20,000-29,999	69.7	61.4	74.1	100.0	84.0
30,000-39,999	38.3	54.8	79.2	83.3	76.7
40,000+	--	73.6	82.7	62.5	91.3
(X^2), probability	(28.2)**	(8.6)	(18.5)**	(6.9)	(15.6)*

Table 7.—Percentages of female drinkers by site and selected characteristics—Continued

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Generation					
Issei (first)	--	66.7	77.8	70.0	--
Nisei (second)	--	43.8	60.4	100.0	--
Sansei (third)/more	--	79.5	85.4	67.7	--
(χ^2), probability	--	(27.9)**	(15.3)**	(3.9)	--
Religion					
Buddhism	59.2	58.7	75.6	56.5	--
Catholic	75.0	77.8	75.0	33.3	90.2
Protestant	28.6	71.2	67.2	85.0	82.6
Other	38.6	61.1	33.3	90.0	62.8
None	53.8	70.7	91.3	100.0	87.8
(χ^2), probability	(9.9)*	(4.6)	(10.2)*	(10.0)*	(16.9)*
Religious activity					
Once a week	66.7	58.3	46.2	57.1	70.7
1-3 times/month	50.0	35.3	64.3	66.7	91.5
Less than once/month	57.9	71.3	78.1	77.3	86.9
(χ^2), probability	(2.0)	(9.9)**	(11.9)**	(1.5)	(13.5)*
Parents drink					
Either one abstains	62.6	60.6	71.3	66.7	80.8
Both parents drink	76.8	80.3	83.1	100.0	84.9
(χ^2), probability	(9.5)**	(8.2)**	(3.3)	(4.6)*	(.9)

*$p<.05$
**$p<.01$

AGE

There were significant differences in all of the samples, with the exception of the Caucasians. Higher proportions of drinkers were found in the lower age levels; the least amount of drinking was in the 60-year-old and over category.

EDUCATION

Significant differences were found in all of the sites except for the Santa Clara Caucasian. The lowest proportion of drinkers was in the high school or less group, while the college educated and above showed the highest levels of drinkers.

INCOME

There were significant differences by income in the Japan and Santa Clara samples. Generally, the higher the income, the higher the proportion of drinkers.

GENERATION

Significant differences were found in the Hawaii and Japanese in Santa Clara samples. In both groups, the highest proportion of drinkers were Sansei and the lowest proportion was among the Nisei.

RELIGION AND RELIGIOUS ACTIVITY

Significant differences were found in religion for all groups with the exception of Hawaii and in religious activity in all groups with the exception of Japan and Los Angeles. There were variations by site; in Japan, Catholics drank the most, while in Los Angeles, they drank the least. Buddhism was generally associated with less drinking; those professing no religion generally had a high percentage of drinkers.

As in the male data, frequent church attendance was associated with lower percentages of drinkers.

PARENTAL DRINKING

Significant differences were found in Japan, Hawaii, and Los Angeles. Higher percentages of drinkers were found in families where both parents drank. As for the males, marital status was not significantly related to drinking.

Logistic Regression Models

Two logistic regression models are presented for each site. The purpose of these models is:

1. to evaluate the significant characteristics between drinkers and abstainers for both sexes

2. to evaluate the significant characteristics between male heavy drinkers and non-heavy drinkers (there were not enough female heavy drinkers for analysis)

Both models consist of the following independent variables—age, income, education, generation, religion, church attendance, and parental drinking. These variables were selected because of their comparability and significance across sites.

None of the independent variables were highly correlated with one another. The dependent variable in the logistic model was the log of the odds of being a drinker for both genders and of being a male heavy drinker. The logistic models allowed for the estimation of the linear effects of the independent variables using a maximum likelihood function. A step-wise approach was chosen for the logistic regression analysis, which meant that the independent variables were entered into the model one by one according to their significance levels.

Logistic regression tables (tables 8, 9 and 11) show the logistic regression coefficients for each independent variable and corresponding levels of significance (alpha). The *R* square scores shows the overall predictive power of each model.

DRINKING, NONDRINKING LOGISTIC REGRESSION MODEL (MALES)

Table 8 shows the male pattern of drinking, nondrinking by site. The most powerful model for predicting male drinking behavior is for Los Angeles. The model *R* of .33 indicates that 11 percent of the variance can be explained by the model. The Japan site follows closely with an *R* of .32. The Santa Clara and Hawaii sites follow in terms of predicting male drinking patterns. The Caucasian model has the least explanatory power (3 percent).

There were site differences in terms of the variables predicting drinking behavior. Age was the only significant variable for Japan ($p<.01$) and the Caucasians in Santa Clara ($p<.05$). Years of education ($p<.05$) and parental drinking ($p<.01$) were significant in Hawaii. Income ($p<.05$) was significant in Santa Clara. Religion ("other"), first generation ($p.<05$), and going to church at least once a month ($p<.01$) were significant variables in Los Angeles.

DRINKING, NONDRINKING LOGISTIC REGRESSION MODEL (FEMALE)

Table 9 shows the logistic regression model for predicting drinking, nondrinking behavior for females. The most powerful model for predicting female drinking behavior was for Los Angeles. The model *R* was .39, which indicates that 15 percent of the variance can explained by the model. The Hawaiian model *R* was .38, followed by the Caucasians and Japanese in Santa Clara (R =.36 and .31). The Japan site had the least predictive power (8 percent); nevertheless, on an overall level, the logistic regression analysis indicates a higher predictive power for female over male drinking.

Characteristics of Male Heavy Drinkers

Table 10 shows the characteristics of male heavy drinkers by site. (There were not enough female heavy drinkers to warrant further analysis.) The variables used in the analysis were the same as in the drinking tables.

There were significant differences by age in all of the groups with the exception of the Caucasians. There were again variations by site; there was heavier drinking in Japan and in Santa Clara by the middle groups (30-44, 45-49) and by the younger age groups in Hawaii and Los Angeles. Generally, the heaviest drinking for all of the groups occurred in the 30-44 category.

Table 8. Logistic regression for each site: Male drinking/not drinking

Variables	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Age	-0.19**	0.00	-0.06	0.00	-0.17*
Buddhist	.00	.00	.05	.00	xxx
Protestant	xxx	.00	.00	.00	.00
Other religion	xxx	.00	.00	.12*	.00
No religion	.00	.00	.00	.00	.00
Years of education	.08	.11*	.00	.00	.00
First generation	xxx	xxx	xxx	.137*	xxx
Second generation	xxx	.00	.00	xxx	xxx
Third generation	xxx	.00	.00	xxx	xxx
Income	.00	.06	.12*	.01	.00
Both parents drink	.00	.00	.13**	.00	.00
Go to church at least once/month	.00	.00	.00	-.21**	.00
Model *R*	.32	.19	.28	.33	.17

xxx Either question was not asked or was not applicable.

$^*p < .05$

$^{**}p < .01$

Notes on analysis:

Religion

1. Japan—"Protestant" and "other religion" are grouped with "Catholic" to form the reference groups for the dummy variables "Buddhist" and "no religion."
2. Caucasian—Santa Clara—"Buddhist" is grouped with "other religion."

Generations

1. The dummy variables are not applicable to the samples in Japan and Caucasians in Santa Clara.
2. In the models for Japanese—Los Angeles, the dummy variable "first generation" is used instead of "second generation" and "third generation."

Table 9. Logistic regression for each site: Female drinking/not drinking

Variables	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Age	-0.14**	-0.13*	-0.03	0.00	-0.10*
Buddhist	.11**	.00	.00	.00	xxx
Protestant	xxx	-.02	.00	.00	-.10*
Other religion	xxx	.00	.00	.00	-.25**
No religion	.00	-.05	.00	.00	.00
Years of education	.06*	.07	.00	.15	.11*
First generation	xxx	xxx	xxx	.00	xxx
Second generation	xxx	-.13*	-.05	xxx	xxx
Third generation	xxx	.00	.00	xxx	xxx
Income	.00	.00	.16*	.00	.14**
Both parents drink	.08*	.14**	.00	.00	.00
Go to church at least once/month	.00	-.10*	-.05	.00	-.12*
Model *R*	.29	.38	.31	.39	.36

xxx Either question was not asked or was not applicable.
$^{*}p < .05$
$^{**}p < .01$

Notes on analysis:

Religion

1. Japan—"Protestant" and "other religion" are grouped with "Catholic" to form the reference groups for the dummy variables "Buddhist" and "no religion."
2. Caucasian—Santa Clara—"Buddhist" is grouped with "other religion."

Generations

1. The dummy variables are not applicable to the samples in Japan and Caucasians in Santa Clara.
2. In the models for Japanese—Los Angeles, the dummy variable "first generation" is used instead of "second generation" and "third generation."

Table 10.—Male heavy drinkers by site and selected characteristics (percent distribution)

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Age					
<30	24.8	35.3	4.8	48.5	30.7
30-44	38.3	37.2	19.2	47.5	27.3
45-59	35.5	26.9	17.6	33.7	27.8
60+	26.1	12.7	5.8	18.5	9.5
(χ^2), probability	(8.2)*	(12.4)**	(11.2)**	(13.0)**	(3.7)
Marital status					
Not married	28.0	33.9	13.6	39.1	30.0
Married	34.0	25.2	12.6	34.6	21.8
(χ^2), probability	(1.6)	(2.5)	(.1)	(.4)	(1.7)
Education					
High school or less	32.9	25.6	15.6	27.8	29.4
College	32.8	34.5	12.0	43.1	34.0
Graduate school	25.8	23.8	12.5	29.8	12.7
(χ^2), probability	(.7)	(3.0)	(.5)	(4.9)	(9.2)**
Income (in dollars)					
0-9,999	30.2	.0	.0	37.5	18.2
10,000-19,999	30.6	29.6	13.6	40.5	28.6
20,000-29,999	36.6	29.4	18.5	25.0	30.0
30,000-39,999	37.9	25.9	6.1	36.8	32.7
40,000+	--	31.9	14.5	41.0	22.4
(χ^2), probability	(1.9)	(6.8)	(4.7)	(3.6)	(2.3)

Table 10.—Male heavy drinkers by site and selected characteristics—Continued

	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Generation					
Issei (first)	--	35.3	17.3	62.5	--
Nisei (second)	--	23.0	9.9	32.7	--
Sansei (third)/more	--	32.1	15.3	24.8	--
(χ^2), probability	--	(2.6)	(2.2)	(24.0)**	--
Religion					
Buddhism	34.7	33.7	12.5	31.3	100.0
Catholic	25.0	26.3	12.5	45.5	29.5
Protestant	14.3	16.7	13.2	23.2	28.8
Other	39.1	25.0	5.3	58.3	13.3
None	30.4	35.9	16.4	46.2	6.1
(χ^2), probability	(2.6)	(6.8)	(1.6)	(17.0)**	(5.0)
Religious activity					
Once a week	12.5	3.9	8.0	21.4	20.0
1-3 times/month	38.5	6.7	10.7	25.0	30.0
Less than once/month	34.9	32.3	12.9	37.4	31.3
(χ^2), probability	(3.6)	(12.6)*	(.6)	(2.5)	(1.8)
Parents drink					
Either one abstains	31.6	24.9	11.8	36.5	24.4
Both parents drink	38.8	46.0	19.1	37.1	27.7
(χ^2), probability	(2.5)	(10.1)**	(2.4)	(.0)	(.2)

*$p < .05$
**$p < .01$

There were no significant differences by marriage and income, while in education, the only significant difference was in the Caucasian sample. Caucasians with a graduate education had the least amount of heavy drinkers.

Generation was significant only in the Los Angeles sample, with a descending order of heavy drinking—Issei, Nisei, and Sansei. It should be noted that the Los Angeles sample included a number of "new Issei," that is, temporary businessmen from Japan.

Protestants in Los Angeles had the lowest proportion of heavy drinkers, while religious activity was significant only in Hawaii. Parental drinking was also statistically significant in Hawaii.

HEAVY DRINKING, NONHEAVY DRINKING LOGISTIC REGRESSION MODEL (MALES)

Table 11 shows the logistic regression model for males in terms of predicting heavy drinking, nonheavy drinking. The most powerful model for male heavy drinking was again in Los Angeles ($R = .26$). About 7 percent of the variance can be explained by the model. The Hawaii site followed ($R = .24$), and then the Japanese and Caucasians in Santa Clara. The Japan site had the least explanatory power ($R = .04$).

There were again individual site differences in terms of predicting heavy drinking behavior. There were no significant variables for the Japan site. Income ($p < .05$), age, and going to church at least once a month ($p < .01$) were significant for Hawaii. Education ($p < .05$) was the only significant variable for the Santa Clara Japanese.

Generation ($p < .01$) was the only significant variable for Los Angeles, while years of education ($p < .05$) was the only significant predictor for the Caucasian sample.

Discussion

The findings indicate no clear linear pattern of alcohol consumption by site such as has been found in studies of other phenomena of Japanese living in various locations. For example, in the Hawaiian heart study (Kagan et al. 1974), the phenomena start with low heart and stroke disease rates in

Table 11. Logistic regression for each site: Male heavy drinking/nonheavy drinking

Variables	Japan	Japanese—Hawaii	Japanese—Santa Clara	Japanese—Los Angeles	Caucasian—Santa Clara
Age	0.00	-0.16**	0.00	-0.06	0.00
Buddhist	.00	.00	.00	.00	xxx
Protestant	xxx	.00	.02	.00	.00
Other religion	xxx	.00	.00	.00	.00
No religion	.00	.00	.00	.00	.00
Years of education	.08	.00	-.12*	.00	-.10*
First generation	xxx	xxx	xxx	xxx	xxx
Second generation	xxx	.00	.00	-.16**	xxx
Third generation	xxx	.00	.00	-.23**	xxx
Income	.00	.12*	.00	.00	.00
Both parents drink	.02	.00	.08	.00	.00
Go to church at least once/month	.00	-.14**	.00	.00	.00
Model *R*	.04	.24	.15	.26	.13

xxx Either question was not asked or was not applicable.

*$p<.05$

**$p<.01$

Notes on analysis:

Religion

1. Japan—"Protestant" and "other religion" are grouped with "Catholic" to form the reference groups for the dummy variables "Buddhist" and "no religion."
2. Caucasian—Santa Clara—"Buddhist" is grouped with "other religion."

Generations

1. The dummy variables are not applicable to the samples in Japan and Caucasians in Santa Clara.
2. In the models for Japanese—Los Angeles, the dummy variable "first generation" is used instead of "second generation" and "third generation."

Japan, higher rates in Hawaii, and the highest rates among Japanese Americans living on the United States mainland. The theory follows an assimilation and acculturation path—that the initial behavior (or values or attitudes) is brought to local sites by Japanese immigrants and that these behaviors last the longest in areas of high Japanese concentration, such as in Hawaii, and are changed most by "Americanization" in areas where the group is small and scattered, such as in Santa Clara County.

Because past findings have fallen neatly into the above path, it has been assumed that most behaviors fall into this framework. There is then a search for variables that can explain the influence of assimilation—the heart study looked at diet and stress, while other factors are thought to be changing family patterns and the influence of acculturation to American lifestyles.

However, there are limitations to this assimilation model, even though some empirical data fall into this perspective. The model assumes the following:

1. That there is a static relationship between Japan and the United States so that behaviors in Japan are frozen in time and that changes in the Japanese only occur after emigration.

2. That there is a continuity among the immigrant groups, no matter where their previous residence in Japan. Therefore, there is seldom a careful matching of family groups or even the village or neighborhood from which immigrants have departed and the subsequent adaptation of their kin or ken (state) in the new country. The assumption of continuity appears to be based on an assumption of the homogeneity of people from Japan.

3. That all behaviors follow a similar path.

There is little question that most, if not all, behaviors are influenced to some degree by exposure to the United States. But even under an assimilationist framework, there will be wide differences based on community and family cohesion, reception by the dominant community, length of stay, and life experiences. Therefore, it can be expected that behavior, especially a voluntary one such as alcohol consumption, would vary by site.

We stress the voluntary nature of alcohol consumption—one is not forced to drink and could therefore pick and choose the time, place, situation, and with whom to drink. Our respondents both in Japan and the United States indicated that drinking with friends was the most common method of consumption. Since our respondents had close ethnic friends, their drinking styles were developed with fellow ethnics. The influence of the dominant culture would only be a broad one—it should be mentioned that many of our respondents reported that they did not feel comfortable drinking with non-Japanese especially to the point of getting drunk, so that there is a development of a local style.

Further, the majority of Japanese Americans, especially of the third generation, are not familiar with the current drinking styles of Japan; their familiarity with the culture of the old country has been through their parents and grandparents who emigrated from Japan decades ago (and of course, these styles have changed drastically). Therefore, the development of a distinctive ethnic style of drinking is based primarily on the experiences of the Japanese Americans in their respective areas of residence. Location covers availability, ambiance, norms, and drinking styles. Location is also related to majority-minority status, the influences of advertising, acculturation, prejudice, and discrimination. And it influences what to drink, how much, with whom, and under what situations. So the Japanese Americans in Hawaii prefer beer, while their peers in Santa Clara County prefer wine.

It is our position that there has developed a variety of Japanese American drinking styles based on locale. (A future study will compare the different sites in Japan.) These drinking styles have evolved through the generations and can be thought of as a variety of local ethnic styles; the one exception is the Japanese businessmen in places such as New York and Los Angeles who are here for a temporary stay and have brought over and maintained many of the current life styles of Japan, including drinking style (Kitano 1985).

Our findings add complexity to the problems related to alcohol. Although all sites reported very little excessive problem drinking, the idea that there are significant differences in a numerically small and presumed homogeneous group by location adds to the already complex problem of alcohol consumption. We also question findings concerning the Japanese and other ethnic groups that do not take into account area and local conditions.

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Alcohol Abuse Among Koreans and Taiwanese

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Introduction

This paper discusses the epidemiology of alcohol abuse and dependency among Koreans and Chinese and some of the biological and psychosocial factors that may affect their use and abuse of alcohol.

Koreans have been called the "Irish of the Orient," in part because of their long history of rebellion against other nations seeking to control them and in part because of a purported proclivity toward alcohol use (Park et al. 1984). The Chinese, by contrast, are sometimes termed the "Jews of the Orient" because of their temperate use of alcohol. The data presented here

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tend to support these generalizations. However, recent rapid industrialization and social changes are affecting alcohol use even among the Chinese who have emigrated to Taiwan from the mainland.

Although the cultures of China, Korea, and Japan are similar in some ways, they are also importantly different. Their commonalities are derived from the impact of Chinese civilization on the people of both Korea and Japan. Taoism and Buddhism first influenced the Chinese and were then transported from China to Korea and thence to Japan. Confucianism, the teachings of the great Chinese sage and philosopher Confucius, also has very much influenced the people of China, Korea, and Japan (Wilson 1982). Among his poetic sayings was the following:

> If there be righteousness in the heart, there will be beauty in the character.
>
> If there be beauty in the character, there will be harmony in the home. If there be harmony in the home, there will be order in the Nation.
>
> If there be order in the Nation, there will be peace in the world.

By emphasizing harmony and propriety, Confucius advocated a society in which people get along with one another, avoid dissension, and are interpersonally sensitive so as to avoid confrontations. In his traditional view, male-female relationships were also structured, hierarchical, and proper.

In China, alcohol is used in moderation and only during social rituals. In modern Korean culture, by contrast, there is a mystique about the importance of males socializing together, drinking heavily, and keeping up with their friends and colleagues in rounds of drinking.

In Japan, behavior when one has been drinking is attributed primarily to the effects of alcohol. For example, one can express anger at one's boss while drunk, behavior that would be unthinkable and unacceptable when sober. There is also an emphasis on males joining one another after work for the comradery of drinking. Business executives also have expense accounts for entertaining customers with dinner and drinks.

In recent years, since an initial report by Wolff (1972, 1973), there has been increasing interest in Asians' physiological response of flushing from alcohol ingestion. We will review papers on the flushing response and also on the aldehyde dehydrogenase isoenzyme deficit, which is believed to be the cause of flushing. Thus, we will be in a position to discuss both some of the psychosocial and biological factors that affect alcohol use in Asian society.

Although the underlying role of these multiple factors is not fully understood, much has been learned. Significant studies have been done of Koreans by Professor Chung-Kyoon Lee and his colleagues at Seoul National University in Korea. In Taiwan, Professor Eng-Kung Yeh of National Taiwan University and director of Taipei City Psychiatric Center, has done a multiyear, national survey of the population of Taiwan, most of whom are Chinese. The remainder of the population are called aborigines and are descendants of natives of the island of Taiwan who lived there prior to Chinese emigration from Fukien Province over 200 years ago. The studies by Lee and Yeh will be discussed in some detail later in this chapter.

In recent years, other Chinese also emigrated to Taiwan when the war between the Chinese Communists and the Chinese Nationalists ended. Chinese Nationalists who fled China took over the government of Taiwan, despite the fact that they were in the minority. Most of those who emigrated in 1949 were high government officials or were in the military and thus could take over power quite directly.

Schaefer has reviewed findings with respect to ethanol metabolism (Schaefer 1981). He concluded that one cannot prejudge a person's drinking problem based on culture or race. However, he points out "the possible exception that oriental people tend to have more difficulty with alcohol, but are less likely to have drinking problems." Schaefer addresses the question of whether there is genetic support for the argument that certain populations are predisposed or preadapted to drinking. He points out that study designs of the past have been uneven and present problems in interpretation because of variations from standardized experimental techniques. He concludes that the first generation of studies of ethanol metabolism are inadequate to determine genetically based predisposition to heavy or light drinking in various ethnic groups involved. Studies of variant forms of alcohol and aldehyde dehydrogenases, however, suggest drinking behavior can have a significant genetic basis. The strongest early research evidence of this are the studies of Wolff (1972, 1973) and Ewing et al. (1974), indicating Asians tend to metabolize alcohol faster than others.

Ewing et al. (1974) have shown that aldehyde toxicity is involved in the Asian flushing reaction to alcohol. Peak breath acetaldehyde levels averaged 10.6 among Caucasians and 24.6 among Asian men. While the exact mechanism of the flushing response has not been definitively studied, it seems to be related to the metabolism of acetaldehyde. Quoting from studies by Barnett (1955), Thompson (1956), and Wang (1968), Schaefer notes that heavy drinking occurs among Asians, but unstructured drinking and alcoholism are rare. He further points out that Jewish populations may also have relatively high acetaldehyde levels (Ewing et al. 1979). Thus, Asians and Jews may have similar biocultural protection from alcoholism.

American Indians, who have a propensity to flush similar to Asians, have high initial levels of acetaldehyde and manifest more discomfort from drinking than Indians of mixed Caucasian ancestry or Caucasians. Despite this, American Indians have serious problems with alcohol (Levy and Kunitz 1974). Thus, Schaefer points out the paradox that biophysiologically based ethanol sensitivity may be protective, but social, psychological, and cultural factors may overcome those biologically based protective effects.

Heath (1986*a*,*b*), in his overview of drinking and drunkenness in transcultural perspective, indicates that social and cultural factors should be taken into account together with physiological and psychological factors to understand the interaction of alcohol and human behavior. He quotes from Marshall (1979): "Studies of alcoholism from a cross-cultural perspective illustrate how one human species, with one drug (ethanol) can have a great diversity of behavior outcomes."

In discussing ethnic groups in America, Heath mentions the classic formulation by Beals in 1946—"emphasizing [Jewish] orthodox intrafamilial introduction of children to wine and the sacred, ritual context in contrast with the Irish pattern in which children are not supposed to drink, but adolescents then are confronted with 'proving their manhood in the convivial secular context of the pub.'" However, because there have been changes in Jewish attitudes with respect to alcohol and they have become more assimilated, their drinking behavior is also changing and alcohol abuse is more common. Irish drinking patterns have also been studied. For example, Heath mentions Stivers' 1976 social history of the Irish, which described how hard drinking fits the Irish self-image and is often a badge of ethnic pride. Others have pointed out the role of drinking before the famine (Barrett 1978) and have noted that moonshining was an important part of the economy (Dawson 1977).

Ethnic Differences

Ethnic differences in alcohol "sensitivity" were originally discussed by Peter Wolff in 1972 in a series of physiological observations. He compared Caucasian adults and infants to Japanese adults and infants, Taiwanese adults and infants, and Korean adults. He found that 83 percent of the Mongoloid adults responded with a visible flush and an increase in the optical density greater than 5 mm. This difference was significant at the .001 level. He also found that the subjective symptoms after alcohol consumption were much more immediate, and that the reaction began to increase and to be apparent with increased optical density 2 to 7 minutes after the completion of drinking. The reaction reached a peak at 30 to 37 minutes.

The flushing reaction alone is not a strong predictor of drinking patterns (Clark, unpublished).[5] In this comparison, however, it was found that those who flush are less often heavier drinkers. Clark points out that men in Japanese culture are given greater license than women to drink. A paradox was the finding that a Japanese American sample in Oahu was consistently more restrictive about how much drinking was acceptable than Japanese American respondents in Santa Clara, even though the Hawaiian group used more alcohol. Clark speculated that the flushing response in Mongoloids may well prevent many from consuming even moderate quantities of alcohol.

Individual variability has been found in facial flushing, facial skin temperature, pulse rate and peripheral blood flow, alcohol and acetaldehyde levels in the blood, and their relations to the urinary excretion of catecholamines in subjects drinking a small amount of alcohol. Mizoi et al. (1979) hypothesized that the differences in flushing to alcohol may reflect a genetic difference in autonomic nervous system responsitivity. He studied individuals who did not flush and compared them with those who did flush. There was no difference in the blood alcohol level between the flushing and nonflushing groups. While the blood acetaldehyde level of the nonflushing groups scarcely increased and remained at a level of 0-0.31 μg/ml, that of the flushing group increased markedly from 0.48 to 0.95 μg/ml. The urinary excretion of catecholamines showed a significant increase in those who flushed; both norepinephrine and epinephrine increased.

On the other hand, flushers and nonflushers do not differ substantially in reported alcohol use. In a study by Schwitters et al. (1982*b*), subjects were

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[5] Note: See also Clark, this monograph—ED.

Table 1.—Flushing response by ethnicity

Response	Caucasian	Chinese	Pilipino	Hawaiian/ part Hawaiian	Japanese	Other	Total
Does not flush	129	35	97	83	290	73	707*
Slow flush (flush after two or more drinks)	25	12	10	18	91	19	171*
Fast flush (flush after one drink or less)	6	41	4	10	166	23	250*
Total	160	88	111	111	547	111	1,128*

*Reduced N reflects missing data on flushing response items $X^2 = 129.06$, 10 *df*, $p < .0001$.

Source: Johnson, R.C.; Nagoshi, C.T.; Schwitters, S.Y.; Bowman, K.S.; Ahern, F.M.; and Wilson, J.R. Further investigation of racial/ethnic differences and of familial resemblances in flushing in response to alcohol. *Behavior Genetics* 14(3): 173, 1984. Reprinted by permission from Plenum Press.

asked to differentiate between fast flushing (defined as one drink or less to evoke flushing) and slow flushing (two drinks or more to evoke flushing). Schwitters and her colleagues hypothesized that fast flushing may represent a qualitatively different response due to greater sensitivity and association with other symptoms. Fast flushing, they suggested, leads to a reduction in drinking more often than slow flushing.

Racial and ethnic differences in flushing have been investigated by Johnson et al. See table 1 for a comparison of different groups.

Park et al. (1984) reported a series of studies done in Hawaii that showed racial-ethnic differences in flushing were more prominent among Mongoloids than among Caucasians. They also compared the flushing response in Koreans and Taiwan Chinese. (See table 2.) They found that the proportion of alcohol users and nonusers was the same in both groups. However, the number of fast flushers among the Taiwanese was much higher than among the Koreans. Park and his associates therefore hypothesized that fast flushing may have an immunizing effect against alcoholism for Japanese and Koreans and to a lesser extent, for Taiwan Chinese.

Table 2.—Number of subjects by alcohol use and flushing response

		Alcohol users		
	Nonusers	Non-flushers	Slow flushers	Fast flushers
Koreans	62	95	101	53
Taiwanese	74	117	57	142

$\chi^2 = 47.88$, 2 *df*, $p < .001$.

Source: Park, Y.J.; Huang, Y.H.; Nagoshi, C.T.; Yuen, S.; Johnson, R.C.; Ching, C.A.; and Bowman, K.S. The flushing response to alcohol use among Koreans and Taiwanese. Reprinted by permission from *Journal of Studies on Alcohol* 45(6):485, 1984. Copyright by Alcohol Research Documentation, Inc., Rutgers Center of Alcohol Studies, New Brunswick, NJ 08903.

Table 3.—Alcohol consumption patterns of Chinese, Japanese, Koreans, and Pilipinos, in Los Angeles (in percent)

Quantity-frequency-variability	Chinese	Japanese	Korean	Pilipino
Abstainer	41.3	32.9	61.8	51.3
Moderate	48.3	41.7	23.6	29.1
Heavy	10.4	25.4	14.6	19.6
Total N=1,103	N=298	N=295	N=280	N=230

$\chi^2 = 79.97, p < .0000$

Source: Kitano, H.L., and Chi, I. Asian Americans and alcohol: The Chinese, Japanese, Koreans and Pilipinos in Los Angeles. In: Spiegler, D.L.; Tate, D.A.; Aitken, S.F.; and Christian, C.D., eds. *Alcohol Use Among U.S. Ethnic Minorities*, NIAAA. Research Monograph No. 18. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., in press.

Kitano and Chi (in press) studied a total of 1,103 Asians including 298 Chinese, 295 Japanese, 280 Koreans, and 230 Pilipinos. (See table 3.) Their findings were similar to those of Cahalan and Room (1974). Those who drank were men under the age of 45; of higher social status, i.e., were more often college graduates in professional occupations; and living in large cities. Their attitudes toward alcohol use were permissive and their friends tolerant of drinking.

Despite heavy drinking in these samples, Kitano and Chi noted there were relatively few examples of social problems. There were a few arrests for drinking reported, but little evidence of job loss, personal impairment, or changes in lifestyle. In other words, they felt that there were effective social controls over most of the drinking behavior.

Clark, in his paper, "Drinking Patterns Among Americans of Japanese Ancestry in Two Study Sites" (Clark, unpublished), reported on a survey of 515 Japanese-Americans in Santa Clara County (301 males, 214 females); 523 Caucasians in Santa Clara (198 males, 325 females); and 514 Japanese Americans in Hawaii (271 males, 243 females).[6] See table 4. The preponderance of females in the Santa Clara Caucasian sample may have considerable impact in any comparison. Clark found significant differences by region and other variables comparing Japanese Americans in Santa Clara, Japanese Americans in Oahu, and Caucasians in Santa Clara. In a previous national survey in 1979, 6 percent of Americans said that they got drunk at least once a month. In the Clark study, 4 percent of the Japanese Americans in Santa Clara, 8 percent of the Caucasians, and 10 percent of the Japanese Americans in Oahu reported that they got drunk at least once a month. Interestingly, he found no correlation between the other variables. His conclusion was that in Santa Clara County, the mean amount of alcohol consumed in the preceding 2 weeks by Caucasian males was 8.05 oz, females 4.02 oz; for males of Japanese ancestry in Santa Clara County, 5.47 oz and for females 2.08 oz. In contrast, males of Japanese ancestry in Oahu consumed 8.11 oz versus 3.24 oz by females. As can be seen, females of Japanese ancestry tended to drink less than those of Caucasian ancestry.

Kitano and Chi in their report, "Asian-Americans and Alcohol: The Chinese, Japanese, Koreans and Filipinos in Los Angeles" (in press), showed that the prevalence of heavy drinkers was highest among the Japanese, 25.4 percent; followed by the Pilipinos, 19.6 percent; Koreans, 14.6 percent; and Chinese, 0.4 percent. On the other hand, they found that the highest percentage of moderate drinkers was among the Chinese, 48.3 percent; followed by the Japanese, 41.7 percent; Pilipinos, 29.1 percent; and Koreans, 23.6 percent. The Koreans had the highest percentage of abstainers, 61.8 percent; followed by Pilipinos, 51.3 percent; Chinese, 41.3 percent; and Japanese, 32.9 percent. These differences were statistically significant. However, a note of caution needs to be expressed, as these averages were for a heterogeneous group.

There are two important points: First, there were many more females in the Korean group, 44.6 percent; followed by the Pilipinos, 37 percent; the Chinese, 26.8 percent; and the Japanese, 20.3 percent. It is our contention that traditional Asian women tend to drink considerably less than the males and dramatically less than their Caucasian counterparts. In comparing males, the highest percentage of heavy drinkers was found among the Pilipinos,

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[6] **Note:** See also Clark and Hesselbrock, this monograph—ED.

Table 4.—Alcohol use by sex for the two study sites, in percent[a]

	Japanese ancestry Santa Clara		Caucasians Santa Clara		Japanese ancestry Oahu	
N	Men (301)	Women (214)	Men (198)	Women (325)	Men (271)	Women (243)
Current drinkers	84	75	85	81	80	68
Ex-drinkers	9	10	10	10	13	14
Lifetime abstainers	7	15	5	9	7	18

Source: Clark, W.B. "Drinking Patterns Among Americans of Japanese Ancestry in Two Study Sites." Alcohol Research Group, Berkeley, CA, September 1985.

[a] Percentages are weighted figures; totals are actual numbers of cases. Ns vary slightly due to nonresponses to some items.

29.0 percent; followed by the Japanese, 28.9 percent; Koreans, 25.8 percent; and Chinese, 14.2 percent. Second, Asians tend to adopt American standards, within limits. The preferred language of the samples of Chinese, Pilipinos, and Koreans was their native language; the Japanese sample preferred English. This suggests that what was being compared was first-generation Chinese, Koreans, and Pilipinos and second-generation Japanese.

What is even more interesting is the comparison of heavy drinking among the females. The Japanese females led with 11.7 percent heavy drinkers followed by the Pilipinos, 3.5 percent; the Koreans, 0.8 percent; and Chinese, 0.0 percent. This illustrates the fact that among the Chinese and Koreans, as well as among Pilipinos, drinking is much less prevalent among the females, a continuation of the customs of their native countries.

Schwitters, et al. (1982*a*), found that ethnic groups in Hawaii differed in the amount of alcohol they consumed. Caucasians were the heaviest drinkers, followed by Hawaiians and part-Hawaiians, persons of Japanese ancestry, then those of Pilipino ancestry. Those of Chinese ancestry were the lowest in alcohol use.

Aldehyde Dehydrogenase Isoenzyme Deficit

There have been a number of important studies of aldehyde dehydrogenase isoenzyme deficit. Goedde and his group have done significant studies in this area.

Harada et al., in a letter to the editor published in Lancet (1982, p. 827), suggested a protective role for aldehyde isoenzymes in alcoholism. (See table 5.) Those deficient in this isoenzyme may refrain from drinking as a result. They also state that alcoholism has always been less common in Japan than in European and North American countries. This observation, however, needs to be established by definitive epidemiological surveys using comparable methodology and sampling techniques.

"Evidence is growing that acetaldehyde is responsible for some toxic effects after ethanol intake" (Wartburg et al. 1983). Harada et al. (1982) stated that these individual and racial differences in blood and breath acetaldehyde concentrations are observed after alcohol consumption. Extremely high blood acetaldehyde levels occur in Asians, leading to an acute aldehyde syndrome also observed after treatment with aldehyde dehydrogenase inhibitors.

Table 5.—Frequency of ALDH isozyme I deficiency in alcoholics, nonalcoholics, and normal controls from Japan

With ALDH isozyme	N	I deficiency (percent)
Normal controls	105	41.0
Alcoholics (total)	175	2.3
Alcoholics with liver disorder	72	2.8
Alcoholics with mental disorder	103	1.9
Schizophrenics	86	41.9
Drug dependents	47	48.9

Source: Harada, S.; Agarwal, D.P.; Goedde, H.W.; Tagaki, S.; and Ishikawa, B. Possible protective role against alcoholism for aldehyde dehydrogenase isozyme deficiency in Japan. *Lancet*, letter to the editor, ii:827, October 9, 1982. Reprinted with permission.

Mizoi et al. (1983) found that after intake of 0.4 gm/kg alcohol, the deficient subjects showed high levels of blood acetaldehyde and symptoms such as facial flushing and other dysphoric symptoms, including increase of pulse rate and decrease of diastolic blood pressure. In contrast, subjects with normal ALDH did not show these changes. Based on nine liver specimens obtained at autopsy, the frequency of deficient phenotype of ALDH in Japanese was presumed to be about 36 percent.

Watanabe et al. (1985), in a study lowering blood acetaldehyde, but not ethanol concentrations by pantethine following alcohol ingestion, found different effects in flushing and nonflushing subjects. "Chronic alcoholics present high blood acetaldehyde levels following alcohol intake, because of low hepatic aldehyde dehydrogenase (ALDH, EC1.2.1.3) activity. The most outstanding feature of the present study was the selective reduction of blood acetaldehyde concentrations following alcohol ingestion in nonflushing

Table 6.—Flushing reaction, ALH and ALDH phenotype combinations in hair roots from Japanese and Germans

Flushing	ADH	ALDH
	JAPANESE (N=11)	
+	Atypical	Unusual
+	Typical	Unusual
–	Atypical	Usual
–	Atypical	Usual
–	Atypical	Usual
–	Typical	Usual
+	Atypical	Unusual
+	Atypical	Unusual
+	Atypical	Unusual
–	Atypical	Usual
+	Atypical	Unusual
	GERMANS (N=27)	
ADH:	Atypical 11.1 percent; typical 88.9 percent	
ALDH:	Usual 100 percent; flushing 0 percent	

Source: Goedde, H.W.; Agarwal, D.P.; and Harada, S. Genetic studies on alcohol-metabolizing enzymes: detection of isozymes in human hair roots. *Enzyme* 25:281-286, 1980. Copyright 1980 by S. Karger AG (Basel).

subjects treated with a clinical dose of pantethine. Nonflushing human subjects are due to a modification of acetaldehyde metabolism by pantethine-related metabolites in the liver, but not in the circulating blood."

Goedde and associates have published a series of papers on the differential prevalence of the aldehyde dehydrogenase isoenzyme deficiency. It was found among the Asians that flushing due to alcohol sensitivity was experienced only when unusual ALDH was present. (ADH stands for alcohol dehydrogenase and ALDH stands for aldehyde dehydrogenase.) (See table 6.) In his 1980 "Genetic Studies" paper, he quoted studies which at that

Table 7.—Frequency of ALDH isozyme I-deficiency in different populations

Population	No.	ALDH I-deficiency of population sample (percent)
Europeans	224	0
Egyptians, Sudanese	160	0
Liberians	169	0
Chinese	196	35
Japanese	79	48
Indonesians, Koreans	35	40
Vietnamese	82	57
Thais (northern Thailand)	110	8
Highland Indians (Ecuador)	33	39

Source: Goedde, H.W.; Agarwal, D.P.; and Harada, S. The role of alcohol dehydrogenase and aldehyde dehydrogenase isozymes in alcohol metabolism, alcohol sensitivity, and alcoholism. *Isozymes: Current Topics in Biological and Medical Research* 8:175-193, 1983. Reprinted with permission.

time were not yet published about the metabolism of acetaldehyde in Japanese, Korean, Vietnamese, and Chinese subjects possessing atypical ADH or unusual ALDH or both. These subjects showed a higher steady state blood acetaldehyde concentration and flushing associated with other vasomotor symptoms. In Japanese and Vietnamese, approximately 50 percent showed the absence of the aldehyde dehydrogenase isoenzyme 1.

Tang's study (1981) of aldehyde dehydrogenase in Chinese and Asian Indians found that aldehyde dehydrogenase isoenzyme 1 was absent from the livers of the Chinese. Both the enzymes are present in Asian Indians, but approximately half the Chinese samples lacked one of the isoenzymes. Tang also commented that in a study by Greenfield and Pietruszko, disulfiram was found to inhibit aldehyde dehydrogenase isoenzyme 1 more than

Table 8.—Distribution of ALDH I isozyme deficiency in various racial and ethnic groups

	Sample size	Percent deficient
DEFICIENCY DETECTED		
Asian orientals		
Japanese	184	44
Ainu	80	20
Chinese (native)		
Han	120	50
Zhuang	106	45
Mongolians	198	30
Koreans	209	25
Chinese (living abroad)	196	35
South Koreans	75	27
Vietnamese	82	57
Thais (northern Thailand)	110	8
Indonesians	30	39

Source: Goedde, H.W.; Agarwal, D.P.; Eckey, R.; and Harada, S. Population genetic and family studies on aldehyde dehydrogenase deficiency and alcohol sensitivity. Reprinted with permission from *Alcohol* 2:383-390, 1985. Copyright 1985 by Pergamon Press plc.

2. This suggests that some Asians may, therefore, respond as if they are taking disulfiram.

Goedde et al. (1984) found a difference in the prevalence of the aldehyde dehydrogenase deficiency in four Chinese populations. The rate of the deficiency was only 29.7 percent in Mongolians and 24.8 percent in Koreans. By contrast, the Zhuang and Han groups had rates of 45 percent to 50 percent. See tables 7, 8, 9, and 10.

A still more powerful factor than this biological factor is Asian tradition regarding female propriety. In the Orient, few females abuse alcohol. Unless there is some hitherto undiscovered biological factor among

Table 9.—Distribution of ALDH I isozyme deficiency in various racial and ethnic groups

	Sample size	Percent deficient
DEFICIENCY DETECTED		
American Indians		
Shuara (Ecuador)	99	42
Atacamenos (Chile)	133	43
Mapuche (Chile)	64	41
Sioux (North America)	97	5
Mestizos (Mexico)	46	4

Source: Goedde, H.W.; Agarwal, D.P.; Eckey, R.; and Harada, S. Population genetic and family studies on aldehyde dehydrogenase deficiency and alcohol sensitivity. Reprinted with permission from *Alcohol* 2:383-390, 1985. Copyright 1985 by Pergamon Press plc.

Table 10.—Incidence of ALDH isozyme deficiency in four Chinese populations

		Deficient type		Normal type	
Population	N	N	Percent	N	Percent
Mongolian	198	59	29.7	139	70.3
Korean	209	52	24.8	157	75.2
Zhuang	106	48	45.3	58	54.7
Han	120	60	50.0	60	50.0

Source: Goedde, H.W.; Agarwal, D.P.; Harada, S.; Benkmann, H.G.; Kriese, L.; Bogdanski, P.; Du Ruofu; Meiying, C.; Yida, Y.; Jiujin, X.; Shizhe, L.; and Wang, Y. Incidence of aldehyde dehydrogenase deficits in four ethnic populations in China. *Human Heredity* 34:184, 1984. Reprinted with permission.

females, we must assume that a traditional emphasis on propriety has been the most powerful influence in dissuading females from abusing alcohol in Asia.

Differences Between Asians in Asia and Asians in America

Demographic data concerning the survey of 5,100 Koreans in Korea reveal distinct differences between Koreans in Korea and those Koreans who have emigrated to the United States. Native Koreans are much less well educated. According to Hurh and Kim (1984), the average Korean-American has a college education; some 60 percent have completed college in Korea or in the U.S. In contrast, in Seoul, as well as in the rural countryside, they have had much less education. The fact that a very high percentage, 70 percent, are Christians in Los Angeles (mostly Protestant) attests to the arduous work of the Christian missionaries in Korea and to the gratitude of the Koreans to the Christian clergy who long offered sanctuary during Japan's occupation of Korea.

In addition, the Korean-American churches in the United States serve an important ethnic function as islands of security for new immigrants. Although these immigrants are well educated, hard-working and ambitious, they are often frustrated because of problems in speaking the English language. (The average Korean college graduate has had 6 years of English in school and can read and write English, but has great difficulty in communicating in English [Hurh and Kim 1984]). The churches are a very important source of social support and also of prohibition against using alcohol. Therefore, Korean males (Korean females seldom drank in Korea) may greatly curtail their alcohol intake in America, in contrast to the larger amounts usually consumed in Korea. Alternatively, when questioned about their alcohol intake, partly due to the church's prohibitions, they may say that they drink less. There may also have been selective migration of those who drank less. Since only 12 percent of Koreans are church affiliated compared to half (51 percent) of the immigrant Korean-Americans, this is suggestive of selective migration (as is the very high percentage of college graduates).

Comparing the data from Taiwan and the data from the U.S. and Kitano's study of Asians in Los Angeles, several things are apparent. The percentage of Chinese who drink in Taiwan is considerably lower than the percentage of Chinese who drink in Los Angeles. Indeed, since many of the Chinese studied in Los Angeles stated Chinese was their primary language, we must assume that these are first-generation Chinese Americans similar to Chinese in Taiwan.

The Chinese in Los Angeles have come from many parts of Asia and Southeast Asia—China, Hong Kong, Singapore, the Philippines, Indochina, Taiwan, etc. Not only do they come from many different nations in Asia, they are not a homogeneous group in other ways as well. This is pointed out by Goedde in his genetic studies of the aldehyde dehydrogenase isoenzyme deficit (Goedde et al. 1984).

It is not easy to explain the differences in the drinking patterns of the Chinese in Taiwan (who are also heterogeneous, being comprised of descendants of Chinese from Fukien Province and also of Nationalist Chinese who came in 1950 from the mainland, and of a small percentage of aborigines) and of Chinese Americans from many parts of Asia who constitute a heterogeneous ethnic mix. One plausible hypothesis is that as the Chinese become acculturated and more American, their drinking behavior becomes more like that of other Americans, though still tempered by earlier cultural tradition. The final result might then be a temperate Chinese American who drinks more than the Chinese at home, but less than other Americans.

National Study in Korea

There were few studies of alcoholism in Korea in the past. Among those, Oh and Yoon (1980) studied alcoholic patients admitted to the psychiatric department of a general hospital. They found that the admission rate of alcoholic patients was 3.1 percent of all admissions. Seventy percent of the alcoholics were ages 32 to 40.

Min et al. (1977) reported on a nationwide survey of alcoholics, ages 12-30. They found 379 cases of Korean young drinkers (199 males and 180 female subjects). Using the Michigan Alcoholism Screening Test (MAST), they found that 66 percent of the 379 cases were categorized as alcoholics. Among the alcoholic criteria that seemed to be important in Korean adolescents were the following: frequent episodes of alcoholic intoxication, liver trouble due to drinking, one or more episodes of alcoholic blackout, family members concerned about their drinking, morning drinking, trouble with lovers or spouse due to drinking, loss of lovers or spouse due to drinking, neglect of vocational obligations because of drinking, arrests due to overdrinking, fighting when drinking, alcoholic hangover, current cigarette smoking, and overdrinking to relieve intrapsychic conflict.

Lee and Lee (1975) in their study, "Alcoholism in Korea," concluded that a large number of alcoholics were from broken families, that the drinking patterns of the alcoholics were characterized by excessive use of alcohol, more frequent intoxication, drinking at a younger age, longer duration of drinking and frequent legal problems.

Lee et al. (1986, unpublished) studied the prevalence of psychiatric disorders in Korea, sampling a total of 5,100 subjects using the National Institute of Mental Health Diagnostic Interview Schedule (DIS III). (See table 11.) The majority of the subjects were interviewed in the capital city of Seoul, where 3,134 subjects were interviewed. In the rural areas, 1,966 subjects were interviewed. In Seoul, 1,490 males and 1,644 females were interviewed; in the rural areas, 974 males and 992 females were interviewed.

The DSM III criteria for the diagnosis of alcohol abuse require both pathological use and impairment in social or occupational functioning. For the diagnosis of alcohol dependence, the first criterion is *either* pathological use, or impairment in social and occupational functioning, as described in the table. In other words, only one of the two criteria is necessary, plus the criterion of tolerance or withdrawal.

Using the same interview schedule and questions about alcohol abuse and dependency, the Korean subjects revealed a much higher prevalence of alcohol abuse and dependency. In Seoul, the prevalence of alcohol abuse/dependency was 21.8 percent (from table 12). In the Korean rural areas, it was 22.4 percent. By contrast, in St. Louis, the rate was 15.7 percent and in New Haven, 11.5 percent.

The lifetime prevalence rate of alcohol abuse and dependence varied from one age group to the next. (See table 13.) In the capital city of Seoul, alcohol abuse was highest in the 25-44 and 45-65 age categories. Prevalence in each was 15.20 percent and 15.15 percent, respectively. In the 18- to 24-year-old age group, the rate was only 7.37 percent. Prevalence of alcohol dependency increased chronologically with age from the 18- to 24-year-old group to the 25- to 44-year-old group, then to the 45- to 65-year-old group, with respective rates of 5.96 percent, 8.45 percent and 13.89 percent for the oldest age group. In rural areas, prevalence of alcohol abuse was highest in

Table 11.—DIS/DSM III alcohol disorder measure summary

ALCOHOL ABUSE

(both criteria below required)

Criterion A (pathological use)

One of the following is present:

1. Wanted to stop drinking but couldn't
2. Tried to control drinking
3. Drank as much as a fifth of liquor in one day (or equivalent in wine or beer)
4. Had blackouts while drinking
5. Continued to drink when a serious illness might be made worse
6. Period when could not do ordinary daily work well unless had something to drink
7. Two or more benders that each lasted at least a couple of days

Criterion B (impairment in social or occupational functioning)

One of the following is present:

1. Family objected because drinking too much
2. Friends, doctor, clergy, or other professional said drinking too much for own good
3. Had job or school troubles because of drinking
4. Lost job or kicked out of school on account of drinking
5. Got into trouble driving because of drinking
6. Was arrested or held at police station because of drinking or disturbing the peace while drinking
7. Got into physical fights while drinking

ALCOHOL DEPENDENCE

(both criteria below required)

Criterion A (either pathological use or impairment in social and occupational functioning as assessed for alcohol abuse above)

Criterion B (tolerance or withdrawal)

One of the following is present:

1. Period of 2 weeks when every day drank seven or more drinks
2. Needed a drink just after getting up
3. Had "the shakes" after stopping or cutting down on drinking

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Source: Burnam, A.M. Prevalence of alcohol abuse and dependence among Mexican Americans and non-Hispanic whites in the community. In: Spiegler, D.L.; Tate, D.A.; Aitken, S.F.; and Christian, C.D., eds. *Alcohol Use Among U.S. Ethnic Minorities*, NIAAA. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., in press.

Table 12.—Lifetime prevalence rate of DIS/DSM III alcohol abuse/dependence in Korea, in percent

	Seoul N=3,134	Rural N=1,966
Alcohol abuse	12.95	10.65
Alcohol dependence	8.76	11.74
Alcohol abuse and dependence	(7.87)	(10.76)
Alcohol dependence only	(.89)	(.98)
Alcohol abuse/dependence (sum)	21.71	22.39

Source: Lee, C.-K.; Kwak, Y.S.; Yamamoto, J.; Rhee, H.; Kim, Y.S.; Han, J.H.; Choi, J.O.; and Lee, Y.H. "DIS Lifetime Prevalence in Korea: A Nationwide Epidemiologic Study of Mental Disorders in Korea, 1986."

Table 13.—Prevalence of alcohol disorders by age group, in percent

	Ages 18-24	Ages 25-44	Ages 45-65
Alcohol abuse			
Seoul	7.37	15.20	15.15
Rural	8.85	12.78	9.22
Alcohol dependence			
Seoul	5.96	8.45	13.89
Rural	5.00	10.30	18.56

Source: Lee, C.-K.; Kwak, Y.S.; Yamamoto, J.; Rhee, H.; Kim, Y.S.; Han, J.H.; Choi, J.O.; and Lee, Y.H. "DIS Lifetime Prevalence in Korea: A Nationwide Epidemiologic Study of Mental Disorders in Korea, 1986."

Table 14.—Lifetime prevalence of DSM III, in percent

	Seoul		Korean rural	
	Male	Female	Male	Female
Alcohol/abuse	25.63	1.59	20.54	.90
Alcohol/ dependency	17.23	1.04	22.39	.67

Source: Lee, C.-K.; Kwak, Y.S.; Yamamoto, J.; Rhee, H.; Kim, Y.S.; Han, J.H.; Choi, J.O.; and Lee, Y.H. "DIS Lifetime Prevalence in Korea: A Nationwide Epidemiologic Study of Mental Disorders in Korea, 1986."

the 25- to 44-year-old age group, whereas alcohol dependence rose dramatically from the youngest to the oldest categories and ranged from 5.0 percent to 10.3 percent to 18.56 percent in the oldest category.

When one considers the sex of subjects, there is a very dramatic difference. (See table 14.) Male alcohol abusers predominate both in the capital city of Seoul and in the rural areas. The fact that even fewer rural females abuse alcohol or are alcohol dependent probably is a function of rural subjects being more traditional. Male drinking is generally viewed as acceptable in Korea; drinking by females is openly disapproved of.

While alcohol abuse is greater in Seoul than in the rural areas, alcohol dependence is greater in the rural areas. When alcohol abuse and dependency cases are combined, the prevalence is 21.71 percent in Seoul, 22.39 percent in the rural areas.

Table 15 describes prevalence of DIS/DSM III disorders among nonalcoholics and alcoholics in Korea.

Mania is much more frequent among alcoholics than nonalcoholics both in Seoul and in the rural areas. Major depression is also more common among alcoholics than nonalcoholics in Seoul and also in the rural areas. Dysthymic disorder is about equally prevalent in alcoholics and nonalcoholics in the city as well as in rural areas.

Table 15.—DIS/DSM III diagnostic rates in nonalcoholics and alcoholics

DIS/DSM III diagnosis	Unweighted Ns with positive diagnosis		Percent with positive diagnosis among:			
			Nonalcoholics		Alcoholics	
	Seoul	Rural	Seoul	Rural	Seoul	Rural
Mania	11	7	0.20	0.20	0.93	0.84
Major depression	103	71	2.89	3.14	4.58	5.07
Dysthymic disorder	78	41	2.52	2.07	2.36	2.33
Any drug disorder	29	11	.66	.47	1.80	.85
Phobic disorders	184	124	6.36	6.81	4.30	4.65
Panic disorder	38	57	1.36	3.27	.69	1.69
Antisocial personality	65	15	1.12	.34	5.27	2.12

Source: Lee, C.-K.; Kwak, Y.S.; Yamamoto, J.; Rhee, H.; Kim, Y.S.; Han, J.H.; Choi, J.O.; and Lee, Y.H. "DIS Lifetime Prevalence in Korea: A Nationwide Epidemiologic Study of Mental Disorders in Korea, 1986."

Table 16.—Mean age of onset of first alcohol symptom

	Mean age	Standard deviation
Seoul		
All alcoholics (N=574)	28	10
Male alcoholics (N=538)	28	9
Female alcoholics (N=36)	34	13
Missing age of onset (N=144)		
Rural		
All alcoholics (N=398)	30	9
Male alcoholics (N=386)	30	9
Female alcoholics (N=12)	38	11
Missing age of onset (N=74)		

Source: Lee, C.-K.; Kwak, Y.S.; Yamamoto, J.; Rhee, H.; Kim, Y.S.; Han, J.H.; Choi, J.O.; and Lee, Y.H. "DIS Lifetime Prevalence in Korea: A Nationwide Epidemiologic Study of Mental Disorders in Korea, 1986."

Phobic disorder is more prevalent among nonalcoholics both in the city and in the countryside. This is also true of panic disorder. However, it should be realized that the diagnoses of phobic disorder and panic disorder are much higher among females who tend to abuse alcohol much less often, so this is an expected difference. Antisocial personality is significantly higher among alcoholics in the city than in the countryside.

While alcohol abuse/dependency is greater in Korea (21.8 percent in Seoul, 22.4 percent in rural Korea, compared to 15.7 percent in St. Louis, Missouri), drug abuse dependency is much lower (0.9 percent in Seoul, 0.5 percent in rural parts of Korea) and much higher in St. Louis at 5.5 percent.

Male alcoholics showed evidence of alcohol dependence at a younger age (28 in Seoul and 30 in rural areas) than females (34 in Seoul and 38 in rural areas). See table 16.

Taiwan Study

There is a long and distinguished history of psychiatric epidemiology in Taiwan. Initial studies were made under the leadership of Tsung-Yi Lin (Lin 1953; Lin et al. 1969). This epidemiological study was done throughout Taiwan from 1946 to 1948. The method used was community informants. Leaders in the community provided case finding information; this was then followed up by a team of psychiatric residents and medical students who interviewed the subjects. With these methods, it was ascertained that the prevalence of alcohol abuse and dependency (at that time more probably defined as alcohol dependency syndromes) was on the order of 0.01 percent, that is to say, only 1 out of every 10,000 Chinese was dependent on alcohol in that era.

Whether this was the true prevalence cannot be determined because of the methodological limitations. This study was not based on a scientific sampling of the population. Results were based upon case findings by community leaders, health providers, etc.

A subsequent study by Yeh et al. (unpublished), using the National Institute of Mental Health Diagnostic Interview Schedule (DIS III), may not be comparable because this was a sample interviewed directly. Nonetheless, there had also been a marked increase in per-capita consumption of alcoholic beverages from 1957 to 1984, from approximately 9 liters per year to 27 liters per year. Because of the Lin survey and for other reasons, there has been a clinical impression that Asians do not abuse alcohol as often as Americans. Thus, the changes in Taiwan are of interest, reflecting a tendency toward increased consumption accompanying increased technological change and prosperity.

Yeh's recent study found that in contrast to earlier studies in Taiwan, there has been a sharp increase in neuroses, alcoholism, and depression. The rate for psychoses, however, showed no change over the past 40 years. In the initial study in 1946-48, neuroses were found in 0.12 percent of the population. In a followup study in 1961-63, the prevalence was 0.99 percent. By contrast, the studies initiated from 1982 to 1985 by Yeh et al. (unpublished) found that in the metropolis (Taipei), the prevalence was 8.2 percent, in the townships (Su-Lin and Tsau-Tung, both cities of 100,000 population), the prevalence was 15.2 percent and in six rural villages, the prevalence was 10.4 percent (Lin 1953; Lin et al. 1969).

Consideration of sociodemographic data in the three sites is of importance. See table 17. In Taipei, 5,005 subjects were interviewed; in the townships, 3,004; and in the villages, 2,995. In Taipei City there were 2,466 males and 2,539 females; in the two townships, 1,579 males and 1,425 females; and in the villages, 1,643 males and 1,352 females. There was a similar dramatic increase in the prevalence of alcoholism comparing the data from 1946 onward. In 1946 the prevalence was reported to be .01 percent. In the 1982-85 study, prevalence in the metropolis was 1.46 percent; in the townships, 1.8 percent; and in the villages, 1.17 percent. These figures are for alcohol dependency only, which is usually less prevalent than alcohol abuse. The DSM III criteria, however, may lead to finding more alcohol dependents than abusers.

The DSM III criteria for the diagnosis of alcohol abuse require criteria both of pathological use and of impairment in social or occupational functioning. For the diagnosis of alcohol dependence, the first criterion is *either* pathological use, or impairment in social and occupational functioning as described above; only one of the two criteria is necessary, plus the criterion of tolerance or withdrawal.

Although these figures are not remarkably high compared to U.S. data, they represent more than a hundredfold increase. Yeh points out that Chinese traditionally have negative attitudes toward excessive alcohol intake. This may explain the low abuse of alcohol among the Chinese in Taiwan as well as in San Francisco. However, there has also been a marked increase in alcohol use over the past 30 years. When the alcohol abuse and alcohol dependency cases are combined, the rate is highest in the two townships, 9.8 percent; followed by the villages, 7.5 percent; and lowest in the capital city, 4.9 percent. This compares with prevalences in New Haven of 11.5 percent, in Baltimore of 13.7 percent, and in St. Louis of 15.7 percent (Robins 1984). The prevalence rate of alcohol abuse/dependency (9.8 percent) for the two townships is fairly comparable with that of New Haven (11.5 percent), but if you were comparing the overall Chinese rate in Taiwan, it is significantly lower than for Americans in New Haven, St. Louis, and Baltimore.

Of additional interest is the finding that in Su-Lin, a city of approximately 100,000 population that the Yeh group refers to as a township, the prevalence of alcohol abuse was significantly higher than in Tsau-Tung, a similar city of 100,000. In Su-Ling the prevalence was 9.1 percent for alcohol abuse and 2.3 percent for alcohol dependency. In Tsau-Tung the prevalence of alcohol abuse was 6.9 percent and dependency, 1.3 percent. These are significantly different. The two cities are also different in demography in that

Table 17.—Sociodemographic data in three sites (1982–1985), in percent

Sociodemographic data	Metropolis N=5,005			Townships N=3,004			Villages N=2,995		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Age group[a,b,c]									
18-24 years	17.6	21.2	19.4	22.0	24.4	23.1	27.1	29.8	28.3
25-44 years	41.9	49.6	45.7	49.5	46.6	48.1	39.8	38.0	39.0
45-64 years	31.5	22.8	27.1	22.5	20.9	21.8	25.7	24.5	25.2
65+ years	8.9	6.6	7.8	6.0	8.1	7.0	7.3	7.7	7.5
Education[a,b,c]									
9th grade and lower	40.4	50.7	45.6	63.5	73.5	68.1	72.7	82.6	77.2
10th grade and higher	59.6	49.3	54.2	36.5	26.5	31.9	27.3	17.4	22.8
Marital status[b]									
Married	68.4	69.9	69.1	70.4	72.1	71.2	65.8	69.7	67.5
Never married	26.6	21.8	24.2	26.2	18.3	22.4	30.1	20.8	25.9
Others	5.0	8.3	6.7	3.4	9.6	6.4	4.1	9.5	6.5
Domicilie of origins[a,b,c]									
Native Taiwanese	62.3	73.9	68.2	92.2	94.3	93.2	96.4	97.9	97.1
Others	37.7	26.1	31.8	7.8	5.7	6.8	3.6	2.1	2.9
Occupation[a,b,c]									
I-IV	52.1	33.1	42.5	29.3	18.1	24.0	16.2	10.7	13.7
V-VII and others	32.8	19.3	25.9	64.3	42.7	54.1	77.8	45.7	63.3
Housekeeping, students, and enlisted	15.1	47.6	31.6	6.4	39.2	21.9	6.0	43.6	23.0

[a] Metropolis versus townships $p < .05$.

[b] Townships versus villages $p < .05$.

[c] Villages versus metropolis $p < .05$.

Source: Yeh, E.K.; Hwu, H.G.; Chang, L.Y.; Yeh, Y.L. "Anxiety, Alcoholism and Depression in Taiwan Chinese Community." Paper presented at 139th annual meeting of American Psychiatric Association, Washington, DC, May 1986. (Symposium 71: Alcoholism, Anxiety and Depression in Asia.) Used with permission of the authors.

Su-Ling, where the prevalence rate is higher, is near the capital city of Taipei and has experienced rapid industrialization as well as a rapid population increase. In contrast, Tsau-Tung is isolated from large cities and has been much more stable in population size. (See tables 18 and 19.)

There was a significant difference related to marital status for subjects in the city of Taipei: alcohol dependency in males who were divorced, widowed, or separated was more prevalent than among those who had never married and greater than those who were married.

The sample is predominantly young. Only 7.6 percent are 65 or older. (See table 17.) This is in contrast to the United States, where the older population is rapidly increasing its proportion of the total population—the so-called "graying of America."

Educational level is also of interest. The average educational level is approximately ninth grade and lower in the townships and villages. Subjects in Taipei, the major metropolis, are somewhat better educated, 10th grade and higher. The percentage of females who have had no more than a ninth grade (or lower) level of education is noteworthy. This level in Taipei accounts for 40.4 percent of the males, 50.7 percent of the females; in the townships, 63.5 percent of the males and 73.5 percent of the females; in the villages, 72.7 percent of the males and 82.6 percent of the females. Almost three times as many females in Taipei as in the villages have had a 10th grade or higher education. This suggests that the more cosmopolitan citizens of Taipei advocate the educational advancement of their female offspring more often than do the villagers.

Marital status shows that most of the people in Taiwan are married. Among women, approximately 20 percent have never been married. Of course, the higher percentage of females who are in the "other" category (which include those who are separated, divorced, and widowed) suggests that widows outlive widowers.

Domicile of origin suggests that the vast majority of those who are not native Taiwanese, the (Nationalist) Chinese, live in Taipei. In Taipei, almost a third (31.8 percent) are not native Taiwanese. In the villages, less than 3 percent are not native Taiwanese. The non-natives are mostly Chinese who emigrated to Taiwan in 1949 after the mainland was lost to the Communists. Very few of the others are aborigines, the native people of the island of Taiwan. Nonetheless, this adds a confounding factor in terms

Table 18.—Lifetime prevalence of specific mental disorders in two townships

	Su-Lin N=1,505		Tsau-Tung N=1,499			
	N	Percent	N	Percent	t	p
Psychotic disorders						
Schizophrenia	5	0.3	2	0.1	1.23	n.s.
Manic episode	1	.1	1	.1	0	n.s.
Bipolar disorder	3	.2	2	.1	.71	n.s.
Paranoid disorder	16	1.1	4	.3	2.63	$p<.05$
Depressions						
Major depressive episode	23	1.5	27	1.8	.65	n.s.
Dysthymic disorder	26	1.7	19	1.3	.90	n.s.
Anxiety/somatoform disorders						
Generalized Anxiety Disorder	169	11.2	146	9.7	1.34	n.s.
Phobic disorder	110	7.3	59	3.9	4.09	$p<.05$
Obsessive Compulsive Disorder	11	.7	5	.3	1.56	n.s.
Panic disorder	5	.3	5	.3	0	n.s.
Somatization disorder	2	.1	2	.1	0	n.s.
Substance use disorders						
Alcohol abuse	137	9.1	103	6.9	2.22	$p<.05$
Alcohol dependence	35	2.3	19	1.3	2.06	$p<.05$
Tobacco dependence	186	12.4	181	12.1	.25	n.s.
Drug dependence	1	.1	5	.3	1.22	n.s.
Personality disorders						
Antisocial personality	1	.1	1	.1	0	n.s.
Pathological gambling	12	.8	6	.4	1.42	n.s.
Psychosexual disorders						
Transsexualism	3	.2	3	.2	0	n.s.
Psychosexual dysfunction	39	2.6	14	.9	3.56	$p<.05$
Cognitive impairment	22	1.5	30	2.0	1.04	n.s.

Source: Yeh, E.K.; Hwu, H.G.; Chang, L.Y.; Yeh, Y.L. "Anxiety, Alcoholism and Depression in Taiwan Chinese Community." Paper presented at 139th annual meeting of American Psychiatric Association, Washington, DC, May 1986. (Symposium 71: Alcoholism, Anxiety and Depression in Asia.) Used with permission of the authors.

Table 19.—Effects of alcohol among nonalcoholics and alcohol abusers/dependents in rural Taiwan population

	Non-alcoholic		Alcohol abuse		Alcohol dependence			
Diagnosis	N	Percent	N	Percent	N	Percent	χ^2	p
Talkative:								
No	774	70.1	88	47.6	14	41.2	50.55	<.001
Sometimes	102	9.3	21	11.4	6	17.6		
Always	227	20.6	76	41.0	14	41.2		
Subtotal	1,103	100	185	100	34	100	46.04	<.001
Not applicable	1,669		3		1			
Irritable:								
No	1,018	92.1	137	74.1	26	76.5	61.54	<.001
Sometimes	35	3.2	15	8.1	3	8.8		
Always	52	4.7	33	17.8	5	14.7		
Subtotal	1,105	100	185	100	34	100	59.59	<.001
Not applicable	1,667		3		1			
Question 1:[a]								
No	588	53.6	76	41.1	15	45.5	17.13	<.005
Sometimes	394	35.9	81	43.8	18	54.5		
Always	115	10.5	28	15.1	0	0		
Subtotal	1,097	100	185	100	33	100	10.45	<.005
Not applicable	1,675		3		2			
Question 2:[b]								
No	737	67.4	86	46.5	7	20.6	78.49	<.001
Sometimes	307	28.1	72	38.9	18	52.9		
Always	50	4.5	27	14.6	9	26.5		
Subtotal	1,094	100	185	100	34	100	56.94	<.001
Not applicable	1,678		3		1			

[a] Question 1: Are your side effects after alcohol severer than others?

[b] Question 2: Do you think you can drink much more than others?

Not applicable indicates: 1) never drunk or 2) his or her drinking has never been opposed by family members.

Source: Yeh, E.K.; Hwu, H.G.; Chang, L.Y.; Yeh, Y.L. "Anxiety, Alcoholism and Depression in Taiwan Chinese Community." Paper presented at 139th annual meeting of American Psychiatric Association, Washington, DC, May 1986. (Symposium 71: Alcoholism, Anxiety and Depression in Asia.) Used with permission of the authors.

Table 19.—Effects of alcohol among nonalcoholic and alcohol abuser/dependents in rural Taiwan population—Continued

Diagnosis	Non-alcoholic		Alcohol abuse		Alcohol dependence		X^2	p
	N	Percent	N	Percent	N	Percent		
Palpitation:								
No	702	63.5	122	66.0	26	76.5	4.58	n.s.
Sometimes	87	7.9	10	5.4	3	8.8		
Always	316	28.6	53	28.6	5	14.7		
Subtotal	1,105	100	185	100	34	100	>.69	n.s.
Not applicable	1,667		3		1			
Headache:								
No	757	68.6	113	61.1	15	44.1	14.60	<.01
Sometimes	140	12.7	24	13.0	9	26.5		
Always	106	18.7	48	25.9	10	29.4		
Subtotal	1,103	100	185	100	34	100	12.30	<.01
Not applicable	1,669		3		1			
Nausea:								
No	715	64.8	100	54.1	17	50.0	11.78	<.05
Sometimes	207	18.8	43	23.2	11	32.4		
Always	182	16.5	42	22.7	6	17.6		
Subtotal	1,104	100	185	100	34	100	10.27	<.05
Not applicable	1,668		3		1			
Dizzy:								
No	445	40.3	68	36.8	12	35.3	8.84	<.1
Sometimes	194	17.6	29	15.7	1	2.9		
Always	465	42.1	88	47.5	21	61.8		
Subtotal	1,104	100	185	100	34	100	1.12	n.s.
Not applicable	1,668		3		1			

Not applicable indicates: 1) never drunk or 2) his or her drinking has never been opposed by family members.

of the greater homogeneity of the people of the villages; less so in the townships; and even much less so in the metropolis of Taipei. These ethnic differences certainly require future analyses to tease out the various ethnic factors.

The team interviewed subjects in six rural villages. Most were asked whether they drank or not, as this is a part of the DIS III schedule. In addition, they were asked whether they flushed when drinking. See table 20. There were three categories of subjects who stated they drank alcohol: (1) those who were not alcoholic; (2) those who were diagnosed as alcohol abusing (DSM III); and (3) those with alcohol dependency (DSM III). There were 1,668 subjects (out of 2,995) for whom the flushing question was not applicable because they did not drink, or because their drinking had not been opposed by family members. Table 21 shows lifetime prevalence of alcohol abuse and dependence in the six villages, as well as depression and anxiety disorder.

Table 22 compares the types of treatment sought for disorders between Taipei and two townships.

Summary of Taiwan Data

These data from Taiwan show that there has been a significant and dramatic increase in the prevalence of alcohol abuse/dependency over the past 40 years. Although the epidemiological survey methods of 40 years ago are not comparable to those used in the recent study by Yeh et al., nonetheless, 1985 data from the Taiwan Tobacco and Wine Monopoly Bureau also reveal a marked increase in alcohol consumption. There is no doubt that there has been progress in terms of industrialization, technical changes, and increasing prosperity in Taiwan. There has been such a dramatic change that Taiwan is referred to as one of the three tigers of the Orient, along with Singapore and Hong Kong.

Alcohol abuse is highest in the cities of 100,000 population; next in the six rural villages, and lowest in the large capital city. The fact that the prevalence of alcohol abuse is highest in Su-Lin, a rapidly growing city, suggests stress plays a role in the increase.

Table 20.—Effect of alcohol among nonalcoholics and alcohol abusers/dependents in rural population in Taiwan

Diagnosis	Nonalcoholic		Alcohol abuse		Alcohol dependence	
	N	Percent	N	Percent	N	Percent
Flushing:						
No	435	39.4	80	43.2	18	53.0
Sometimes	100	9.1	13	7.0	3	8.8
Always	569	51.5	92	49.8	13	38.2
Subtotal	1,104	100	185	100	34	100
Not applicable:	1,668		3		1	

Source: Yeh, E.K.; Hwu, H.G.; Chang, L.Y.; Yeh, Y.L. "Anxiety, Alcoholism and Depression in Taiwan Chinese Community." Paper presented at 139th annual meeting of American Psychiatric Association, Washington, DC, May 1986. (Symposium 71: Alcoholism, Anxiety and Depression in Asia.) Used with permission of the authors.

Table 21.—Lifetime prevalence of depressions, anxiety/somatoform disorders, and alcohol abuse/dependence in six villages

Diagnosis	Male N=1,643		Female N=1,352		Total N=2,995		χ^2	p
	N	Percent	N	Percent	N	Percent		
Depressions								
Major depression	10	0.6	19	1.4	29	1.0	4.11	<.05
Dysthymic disorder	9	.5	19	1.4	28	.9	5.00	<.05
Anxiety/somatoform disorder								
Generalized Anxiety Disorder	101	6.1	122	9.0	223	7.4	8.49	<.005
Phobias	36	2.2	67	5.0	103	3.4	16.25	<.005
Panic disorder	1	.1	3	.2	4	.1	.49	n.s.
Obsessive Compulsive Disorder	6	.4	3	.2	9	.3	.14	n.s.
Somatization disorder	1	.1	2	.1	3	.1	.02	n.s.
Alcoholic								
Alcohol abuse	185	11.3	3	.2	188	6.3	151.73	<.001
Alcohol dependence	35	2.1	0	0	35	1.20	27.32	<.001

Source: Yeh, E.K.; Hwu, H.G.; Chang, L.Y.; Yeh, Y.L. "Anxiety, Alcoholism and Depression in Taiwan Chinese Community." Paper presented at 139th annual meeting of American Psychiatric Association, Washington, DC, May 1986. (Symposium 71: Alcoholism, Anxiety and Depression in Asia.) Used with permission of the authors.

Table 22.—Comparison of treatments sought for each mental disorder between Taipei City and two townships, in percent

Diagnoses	Western medical		Traditional Chinese doctor		Self-medication Western drug		Self-medication Chinese herb drugs		Indigenous healer		Counseling or crisis intervention agencies		Number of cases	
	Taipei	T.S.	Taipei	T.S.	Taipei	T.S.	Taipei	T.S.	Taipei	T.S.	Taipei	T.S.	Taipei	T.S.
General anxiety disorder	18.2	9.1*	6.4	4.5	3.2	6.0	2.1	4.1	5.3	7.9	4.2	1.6	(187)	(315)
Panic	40.0	40.0	20.0	10.0	10.0	0	0	0	10.0	10.0	2.0	0	(10)	(10)
Dysthymia	6.5	8.8	6.5	4.4	2.2	4.4	2.2	4.4	4.3	15.6*	4.3	2.2	(46)	(45)
Major depression	13.6	38.0*	4.6	20.0*	6.8	8.0	0	8.0*	13.7	30.0*	6.8	6.0	(44)	(50)
Schizophrenia	13.3	14.3	0	0	0	0	0	0	0	0	0	0	(15)	(7)
Alcohol abuse	7.1	10.0	1.2	1.2	3.6	19.2*	.6	2.9**	0	0	0	.4	(169)	(240)
Alcohol dependence	13.7	20.4	1.4	3.8	2.8	16.7*	1.4	1.9	1.4	0	0	0	(73)	(54)

*$p < .05$
**$p < .1$
T.S. = two townships

Source: Yeh, E.K.; Hwu, H.G.; Chang, L.Y.; Yeh, Y.L. "Anxiety, Alcoholism and Depression in Taiwan Chinese Community." Paper presented at 139th annual meeting of American Psychiatric Association, Washington, DC, May 1986. (Symposium 71: Alcoholism, Anxiety and Depression in Asia.) Used with permission of the authors.

Discussion of Korea and Taiwan

Despite the past stereotypes of Asians not abusing alcohol, we have presented data showing that there have been significant changes in drinking behavior in recent decades. First of all, the Chinese in Taiwan have very much increased their consumption of alcoholic beverages. Even making allowances for the different methodologies of past surveys and that of the most recent survey, there appears to be a real increase in the consumption of alcoholic beverage by the people of Taiwan, most of whom are of Chinese ethnic origin.

Park et al. believe that Koreans—the "Irish of the Orient"—drink more alcohol than the Chinese (1984). The data presented show that Koreans drink significantly more. Even if we make allowances for the fact that what people say they do on interviews may be inaccurate because of inaccurate recall of remote events, cultural tendencies toward self-disclosure, gender differences in self-disclosure, etc., nonetheless, the results of the epidemiological survey in Korea show impressively greater abuse of alcohol by Koreans than Chinese.

There is a distinct difference between the culture of Korea and that of China. It is much more acceptable to drink heavily with one's friends in Korea. Among the Chinese, there is a tendency toward restraint in drinking in the interest of harmony. In both cultures, women are discouraged from drinking alcoholic beverages. Therefore, the very small percentage of alcoholic problems among females is easily understood. When these traditional Asian women migrate to the United States, one would predict that they would be likely to adapt the values and behavior of American females and thus be at a greater risk for alcohol abuse.

The lesser abuse of alcohol by Koreans in Los Angeles as reported by Kitano and Chi (in press) may well be a function of a complicated mix of factors including selective migration (Koreans in Los Angeles are much better educated than Koreans in Korea); and the fact that there are relatively more female Koreans in Los Angeles (the ratio has been stated to be 60 percent females, 40 percent males). Another factor is that not only are Korean American immigrants in Los Angeles better educated on the average, they are much more religious. (Less than 15 percent in Korea belong to Christian churches, but of those who emigrated to Los Angeles according to a study in 1984 by Hurh and Kim, 51 percent were Christians in Korea. When the Koreans came to America and were interviewed in Los Angeles, 70 percent were active Christians. Of these active Christians, 85 percent attended church one or more times each week. This is a very high percentage. Not only are the immigrants different compared to the population of Korea, they are much more involved in Christian activities and more likely to be influenced by their pastor's advocating abstinence). The final factor is that the demand characteristics of the situation in Korea and in Los Angeles may be quite different. (Koreans may be more likely to say that they abstain in Los Angeles because of the impact of the new culture.) Although they are in the United States, they continue to be influenced by the people around them who are mainly Koreans and the ethnic Korean American churches in Los Angeles. In addition to practicing Christianity more regularly, they may feel constrained not to acknowledge their use of alcoholic beverages. In contrast, males in Korea seem to feel that it is an accepted part of their masculinity to describe how much they drink with their friends.

The studies of the flushing response, aldehyde dehydrogenase isoenzyme deficits, and the differential prevalence of alcohol abuse among different Asian groups all offer intriguing possibilities for more definitively studying the complicated factors entering into the final end product of alcohol abuse/dependency. Cultural influences may encourage greater drinking by Korean males in Korea, diminished drinking among Korean males and females in Los Angeles, and increasing levels of consumption among Chinese in Taiwan because of increasing industrial and technological progress and associated social change.

Biological factors such as the flushing response diminish the probability that alcohol abuse will occur. Nonetheless, it should be noted that not all alcoholics are deterred by this isoenzyme deficit. Future studies may definitively analyze these complex factors.

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The Flushing Reaction

Flushing Among the Japanese

Motoi Ogata[1] *and Tooru Tsunoda*[2]

Summary

Facial flushing was reported by 44 percent (46 percent of males; 40 percent of females) of Japanese respondents surveyed in four areas of Japan.[3] Flushing occurring in other parts of the body was reported by 23 percent of the respondents (26 percent of males; 20 percent of females). A third (32 percent) of the sample (28 percent of males; 36 percent of females) reported they did not flush. Data collected were generally consistent with the hypothesis that the flushing response is associated with a lower frequency of other alcohol-related problems. Although flushers reported drinking less frequently than nonflushers, over three-quarters (78 percent) of the males and nearly half (47 percent) of the females who experienced flushing indicated they were able to continue drinking despite having this response to alcohol ingestion. More women than men reported embarrassment because of flushing. This suggests flushing may serve as a greater psychological drinking barrier for women than for men. Little relationship was found between flushing and the reasons given for not drinking with the

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exception that more male nonflushers reported being concerned about becoming alcoholics if they drank.

The flushing response,[4] a rapid physiological reaction to the ingestion of even small amounts of alcohol, has drawn the interest of many researchers engaged in studying biological aspects of alcohol abuse and alcoholism. One of the most interesting aspects of this response is that it appears to be genetically determined and occurs more often among Asians than among Caucasians. Although other cultural and psychological factors are probably also involved, the lower rate of alcoholism among Asian groups originally reported by Lin (1953) and subsequently Barnett (1955) has been partially explained by their higher rate of flushing acting as a deterrent to heavy drinking. As Chan recently noted (1986), a number of additional reports on this topic have appeared since 1970. However, there have been no systematic epidemiological surveys to determine the frequency of occurrence of flushing among the Japanese. This study marks the first comprehensive attempt to determine the prevalence of the phenomenon in a large native Japanese population.

The flushing reaction appears to be related to an average difference in rates of alcohol metabolism between Asians and non-Asians. One of the liver enzyme systems involved in alcohol metabolism is alcohol dehydrogenase (ADH). A more active form of ADH that results in more rapid metabolism of alcohol appears to be more common in Asians than in Caucasians (about 80 percent of Asians are believed to have this form of ADH compared to only 10 percent of Caucasians). However, the relationship between the activity of ADH and the flushing response may not play the most significant role. One of the other liver enzyme systems associated with alcohol metabolism is aldehyde dehydrogenase (ALDH). An "atypical" form of this enzyme that has lower activity (low Km ALDH isozyme, so-called deficiency of type I isozyme) is also considered to play an important role in becoming flushed because of acetaldehyde accumulation. The more rapid accumulation of acetaldehyde and the resulting flushing response presumably makes the flusher reluctant to drink more. Because of this reaction, the flusher is not as likely to drink as heavily as the nonflusher.

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[4] This physiological response to alcohol ingestion usually includes facial flushing and/or flushing in other parts of the body and is often accompanied by one or more of the following reactions: dizziness, drowsiness, anxiety, headache, sweating, palpitations, nausea, and feelings of weakness and malaise.

One of the purposes of this study was to determine whether or not persons who experience flushing are able to continue to drink and whether they drink as much as those who do not have this reaction to alcohol. The flushing response involves not only certain physiological symptoms in response to alcohol ingestion but also the individual's psychological response to experiencing these symptoms. This study was designed as a preliminary investigation of the frequency of flushing and its concomitant symptoms in a Japanese sample, and also its impact on drinking behavior.

Methodology

Four geographical areas representing both urban and rural residents of Japan were chosen. They were:

- Sapporo city and the surrounding rural area on the island of Hokkaido; N=422 (191 males and 231 females)
- Shizuoka city (about 100 miles southwest of Tokyo) and its surrounding rural area; N=301 (151 males and 150 females)
- Suita city (a suburb of Osaka); N=202 (100 males and 102 females)
- The surrounding rural area of Kochi city on the island of Shikoku; N=300 (137 males and 163 females)

The samples were obtained using stratified random sampling of lists of reliable local community organizations. Entirely identical sampling methods could not be carried out in each of the areas, since each presented somewhat different sampling problems. However, there is no evidence that the samples differed significantly in their representativeness of the areas chosen. Age was stratified by 5-year intervals except for those subjects ages 18 to 19 and over 70 who were grouped into only two categories.

The questionnaire was that originally used in the WHO Community Response study (Rootman and Moser 1985), with slight modifications for the purposes of this study. The questionnaire was administered in a face-to-face interview conducted by trained public health personnel.

Interviewers were selected by the area project directors from the pool of public health workers and their supervisors. All interviewers were rigorously trained using standard training manuals and videotapes. Additional details of this study have been described in the joint report of the U.S.-Japan Collaborating Survey on Drinking Patterns (NIAAA 1988).

Questions concerning flushing inquired about such symptoms as facial flushing, flushing elsewhere on the body, itchiness, dizziness, drowsiness, anxiety, headache, head pounding, sweating, palpitations, nausea, and feelings of weakness. Respondents replied to each of the questions concerning these symptoms by indicating whether they experienced each of them "always," "sometimes," "never," or "don't know."

Results and Discussion

As shown in table 1, the percentage of drinkers (defined as those who reported drinking alcoholic beverages once a year or more) ranged from a high of nearly all males (98 percent) in a primarily urban area to a low of less than a third (31 percent) of the females in a predominantly rural sample (environs of Kochi). The percentage of male drinkers ranged from 85 to 98 percent and did not statistically differ in the four geographical areas. The percentage of female drinkers was much more variable—from 31 to 81 percent of the women interviewed depending on the area. One likely explanation is that women in rural areas of Japan (as is true in other countries) drink significantly less than those in urban settings. (The range in the three predominantly urban settings was much narrower; from 68 to 81 percent of the women there were classified as drinkers.)

The typical flushing response—facial flushing—was reported as always accompanying drinking by 44 percent of the respondents (46 percent of the males, 40 percent of the females) (table 2). An additional 21 percent (24 percent of males, 18 percent of females) sometimes experienced facial flushing. A third (32 percent) of those interviewed (28 percent of males, 36 percent of females) reported they never experienced facial flushing. Flushing in other parts of the body (table 3) was reported as always accompanying drinking by 23 percent of the sample (26 percent of the males, 20 percent of the females). It sometimes occurred in an additional 13 percent. Thus flushing sometimes or always was reported by a majority of the drinking respondents. Although flushing affected more men than women, these differences were generally not large. Additional research would be desirable to establish the gender differences with greater certainty.

Although flushing may sometimes be accompanied by other symptoms, drowsiness (table 4) was the most common. Drowsiness was reported as

Table 1.—Numbers of respondents and percentages of drinkers, by area and sex

	Sapporo (urban and rural)	Shizuoka (urban and rural)	Osaka (urban)	Kochi (rural)	Total
Numbers of respondents					
Male	191	151	100	137	579
Female	231	150	102	163	646
Total	422	301	202	300	1,225
Percentages of drinkers					
Male	94 (179)	90 (136)	98 (98)	85 (116)	92 (529)
Female	68 (157)	68 (103)	81 (81)	31 (51)	61 (392)
Total	80 (336)	79 (239)	90 (179)	56 (167)	75 (921)

Note: A "drinker" is defined as a respondent who reported drinking at least once or more during the year prior to the interview. Numbers in parentheses are actual numbers of drinkers.

Table 2.—Percentages of face flushers, by sex

N	Male (561)	Female (527)	Total (1,088)
Always	46	40	44
Sometimes	24	18	21
Never	28	36	32
Unknown	2	6	4

Sum of percentages may not total 100 because of rounding.

Table 3.—Percentages of body flushers, by sex

N	Male (554)	Female (517)	Total (1,071)
Always	26	20	23
Sometimes	18	8	13
Never	49	60	54
Unknown	7	13	10

Sum of percentages may not total 100 because of rounding.

Table 4.—Percentages of respondents with drowsiness, by sex

N	Male (554)	Female (517)	Total (1,071)
Always	24	15	20
Sometimes	51	41	46
Never	24	37	30
Unknown	1	7	4

Table 5.—Percentages of respondents with palpitation, by sex

N	Male (554)	Female (517)	Total (1,071)
Always	9	11	10
Sometimes	27	21	24
Never	61	60	61
Unknown	3	8	5

always or sometimes accompanying flushing by 75 percent of the males and 56 percent of the females. Tables 5 and 6 describe the frequency of the flushing-associated symptoms of palpitations and headache, which were less common. (Palpitations sometimes or always accompanied flushing about a third of the time; headaches were associated less than a quarter of the time.) The predominant response of drowsiness associated with flushing is paradoxical. As Goldstein (1983) noted, acetaldehyde is a central nervous system (CNS) stimulant rather than a CNS depressant. Drowsiness would therefore not normally be expected if acetaldehyde levels are higher in this group. One explanation for this apparent paradox is that the effect is not primarily the result of increased acetaldehyde levels, but a direct result of the depressant effect of ethanol itself.

Table 6.—Percentages of respondents with headache, by sex

N	Male (554)	Female (517)	Total (1,071)
Always	3	3	3
Sometimes	24	15	20
Never	70	74	72
Unknown	3	8	6

Sum of percentages may not total 100 because of rounding.

The responses reported are generally consistent with those of earlier studies by Suwaki et al. (1985) and of Mori et al. (1986) based on a population sample from Hokkaido. Although the possibility was not investigated in the present study, those categorized as "always" flushing may correspond to subjects in the "fast" flushing response category noted by Schwitters et al. (1982). This is a group in which flushing is evoked by one drink or less. Less frequent flushers may represent Schwitters' "slow" flushing category, which required two or more drinks for the response to occur. The slow flushing/fast flushing dichotomy described by Schwitters et al. might also explain the gender difference noted; women may report flushing less commonly than men, possibly because they are more likely to drink less. These preliminary hypotheses should be investigated in future research.

The relationship between flushing and frequency of alcohol intake is shown in table 7. As noted, those who invariably flush are likely to drink less frequently than those who only sometimes flush or those who never flush. Those who sometimes flush, however, are not likely to drink less often than those who are nonflushers. The reason for this is by no means obvious. One explanation might be that both groups drink with about equal frequency, but that those who sometimes flush consume less than nonflushers. This would be consistent with the possibility that those who only sometimes flush fall in Schwitters' slow flush category requiring larger amounts of alcohol to flush. Unfortunately, table 8, which relates the quantities of alcohol drunk with frequency of facial flushing, provides little evidence to support this hypothesis. As expected, those who invariably flush generally reported drinking less than those who never or only sometimes flush.

There is at least one cultural factor that complicates the interpretation of these findings. The drugs taurine and panthene, which are believed to inhibit flushing (Watanabe et al. 1985*a,b*), are relatively easy for laypeople to obtain in Japan. Those who take such drugs (sometimes contained in compounds taken for other health reasons) may report a lesser frequency of flushing than they would have without these drugs. The possibility that the "sometimes" flush category includes subjects whose flushing response is reduced by the ingestion of other drugs should be further studied. Additional research is clearly indicated to explain the apparent paradox in some of the findings reported here.

An interesting finding (table 9) is that nonflushers were more likely than those who flushed to report being afraid of becoming an alcoholic as an

Table 7.—Distribution of drinking frequency within each state of facial flushing, in percent

Drinking frequency	Flushing reaction			
	Always	Sometimes	Never	Unknown
Male				
Nearly every day[a]	36	52	53	22
1-4/w[b]	26	34	28	11
1-4/m or 1-11/y[c]	29	12	17	33
Less than 1/y[d]	9	2	2	33
N	(259)	(136)	(156)	(9)
Female				
Nearly every day[a]	4	11	9	0
1-4/w[b]	12	34	25	10
1-4/m or 1-11/y[c]	54	42	48	14
Less than 1/y[d]	30	13	17	76
N	(214)	(91)	(190)	(29)

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[a] Nearly every day or at least once a day.

[b] 1-4 times a week.

[c] 1-4 times a month or 1-11 times a year.

[d] Not during the last 12 months or never.

Table 7.—Distribution of drinking frequency within each state of facial flushing, in percent—Continued

Drinking frequency	Flushing reaction			
	Always	Sometimes	Never	Unknown
Total				
Nearly every day[a]	19	36	29	5
1-4/w[b]	20	34	27	11
1-4/m or 1-11/y[c]	40	24	34	18
Less than 1/y[d]	19	7	10	66
N	(473)	(227)	(346)	(38)

[a] Nearly every day or at least once a day.

[b] 1-4 times a week.

[c] 1-4 times a month or 1-11 times a year.

[d] Not during the last 12 months or never.

Table 8.—Distribution of alcohol intake within each state of facial flushing, in percent

Alcohol intake (unit[a])	Flushing reaction			
	Always	Sometimes	Never	Unknown
Male				
0-less than 1	60	39	44	70
1-less than 3	32	43	37	30
3-less than 5	7	17	15	0
5 and more	1	1	4	0
N	(259)	(136)	(156)	(10)
Female				
0-less than 1	97	95	92	100
1-less than 3	2	4	7	0
3-less than 5	0	1	1	0
5 and more	0	0	1	0
N	(215)	(92)	(191)	(29)

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[a] A unit is equivalent to 180 ml of Japanese sake, which contains about 15 percent of alcohol.

Table 8.—Distribution of alcohol intake within each state of facial flushing, in percent—Continued

Alcohol intake	Flushing reaction			
(unit)	Always	Sometimes	Never	Unknown
Total				
0-less than 1	77	60	70	92
1-less than 3	18	28	20	8
3-less than 5	4	11	7	0
5 and more	1	1	2	0
N	(474)	(228)	(347)	(39)

Table 9.—Relation between face flushing and concern of becoming an alcoholic as a reason for not drinking in males

	Afraid of becoming an alcoholic					
	Very important reason		Somewhat important reason		Not an important (or not a) reason	
Flushing	N	Percent	N	Percent	N	Percent
Always	10	(29)	25	(28)	224	(51)
Sometimes	8	(24)	37	(42)	91	(21)
Never	16	(47)	27	(30)	113	(26)
Unknown	0		0		10	(2)
Total	34	(100)	89	(100)	438	(100)

Table 10.—Percentages of responses to the question, "Can you continue to drink further after flushing begins?"

N	Male (417)	Female (343)	Total (760)
Yes	77	47	64
No	15	38	25
Unknown	8	15	11

important reason for not drinking. This may indicate some cultural awareness that flushing is an impediment to heavy drinking and may reduce the fear of becoming alcoholic in those who experience the phenomenon.

Although substantial percentages of both men and women reported that they can continue drinking after flushing begins (77 and 47 percent respectively), it is noteworthy that there is a considerable difference between the sexes in this respect (table 10). A possible explanation for this is contained in table 11. Nearly three times more women than men (41 percent versus 14 percent) reported feeling ashamed of their flushing response. As a result, flushing is probably a greater psychological deterrent to drinking for women than it is for men.

The Kruskal-Wallis test was used to determine the significance of some of the differences in symptom frequency and other characteristics of flushers

Table 11.—Percentages of responses to the question, "Do you feel ashamed of your flushing while drinking?"

N	Male (418)	Female (343)	Total (761)
Yes	14	41	27
No	79	49	66
Unknown	6	10	8

Sum of percentages may not total 100 because of rounding.

versus nonflushers in the Sapporo sample (table 12). Subjects with the typical facial flushing response were significantly more likely to report body flushing, drowsiness, headache, sweating, and palpitation associated with drinking. In male nonflushers compared to male flushers, there were significantly higher frequencies of such drinking problems as blackout, morning drinking, fighting, and drinking-associated driving accidents. Excessive drinking was reported as a problem significantly more often by female nonflushers than female flushers, not by male nonflushers. The likelihood that flushing is genetically determined is suggested by the highly significant difference between flushers and nonflushers in the frequency with which flushers of both sexes reported their fathers had also experienced this response.

Differences in the flushing responses of Asians and non-Asians are reasonably well documented. While the percentage of flushers may differ from study to study, these differences seem to be explicable in terms of such factors as survey design and how the flushing reaction is defined. In this study "always" flushes indicates the individual flushed regardless of the quantity of alcohol consumed. As noted, the "sometimes" flushes category may be more ambiguous in that it may include individuals less sensitive to flushing and/or those who may require a larger amount of alcohol for the response to occur.

Although the exact mechanisms of the flushing reaction are not completely understood, a more rapid accumulation of acetaldehyde because of having a deficiency of type I (low Km) ALDH may be thought to play one of the central roles. Respondents in this survey who reported "always" experiencing flushing may have the atypical ADH and the deficiency of low Km ALDH. Alcohol intolerance may be an extreme example of this response. Those subjects who reported "sometimes" experiencing flushing, however, are not easily explained by atypical ADH or a deficiency of type I (low Km) ALDH. Other factors such as physical condictions might be associated with its mechanism.

Much remains to be learned about the pharmacokinetics of alcohol in relation to the flushing response. Clinical evidence that virtually all (98 percent) patients hospitalized for alcoholism in Japan are nonflushers is also suggestive that flushing has prophylactic significance in those with the atypical metabolic response. Further research on this response should not only enhance understanding of the underlying mechanisms, but may also have significance for improved approaches to treating alcoholism.

Table 12.—Results of Kruskal-Wallis test on relationship between face flushing and other flushing responses, and drinking problems in respondents of Sapporo area, by sex

	Male (N=184) Flusher (N=116) versus nonflusher (N=68)	Female (N=201) Flusher (N=117) versus nonflusher (N=84)
Other responses in face flushers		
Body flushing	56.07***	44.89***
Drowsiness	21.78**	5.76*
Headache	6.36*	4.64*
Perspiration	5.12*	7.42**
Palpitation	81.84***	28.55***
Flushing of father	13.05***	18.96***
Drinking problems in nonflushers		
Excess drinking	NS	13.45***
Blackout	11.55***	NS
Morning drink	9.02**	NS
Physical fight	4.82*	NS
Road accident	10.26***	NS

Numbers are chi-square values of Kruskal-Wallis test.

NS = not significant.

$^{*}p < .05$

$^{**}p < .01$

$^{***}p < .001$

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A Comparative Analysis of Facial Flushing Among Alcohol Drinkers in Japan, Hawaii, and California

Walter B. Clark[1]

Introduction

This chapter reports survey data on the flushing reaction to alcohol. The term refers to a rapid reaction to even small amounts of beverage alcohol that often includes flushing of the face and sometimes other reactions as well. This reaction is relatively common among people of Asian ancestry but is not unknown among others. The data presented here on this reaction come from survey research studies concerned with alcohol use and alcohol problems among adults in several samples. The Governments of Japan and of the United States sponsored parallel studies of several samples in each country. The research methods, including the questionnaires, were very similar in all study sites, and this has made possible the comparisons across study sites reported in this and other papers from the project.

The details on sampling, field work procedures, and outcomes are described elsewhere (Clark 1985; NIAAA 1985). Suffice it to say here that the samples are not known to be representative of Japan or the United States or even of the areas from which they were drawn. Strict probability sampling is both useful and expensive; the sampling techniques used were a compromise in which probability sampling techniques were used to the extent possible given the means, but representativeness is not to be expected, and no one should make the mistake of thinking the data describe the populations in the areas sampled, much less the populations of the two nations.

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There are three samples from the U.S. side of this joint project. Two of these are of Americans of Japanese ancestry, one from Oahu in Hawaii, and the other from Santa Clara County, California. A sample of Caucasians was also drawn from Santa Clara County. The interviewing was face to face for the first two samples; telephone interviews were used for the Caucasians. The Japanese data presented here are from four separate samples; however, for present purposes they have been combined here.

In the U.S. data sets, but not the Japanese, a weighting scheme was applied to produce comparable weighted numbers of males and females of each of six age groups (described in Clark 1985). This was done to make simpler comparisons of statistics on drinking patterns and the like across the three U.S. samples by minimizing differences in these due to correlates of age and sex, since the proportions of these categories varied from study site to site. These weights redistribute the cases in age and sex categories but do not inflate the total number of cases in any of the samples.

The Flushing Reaction

Until recently the growing literature on the flushing reaction in various ethnic and racial groups was scattered. Chan's 1986 review pulled these materials together, and we make much use of his work here. From that review, as elsewhere, it seems apparent that there are physiological reasons for the collection of reactions called the flushing reaction. Wolff's (1972) work left little doubt of that. However, it is apparent, too, that more remains to be learned as the following will illustrate. Chan notes, for instance, that atypical liver ALDHI may account for the accumulation of acetaldehyde, which in turn may account for facial flushing and the other reactions. This could be because flushers produce acetaldehyde at a higher rate upon drinking alcohol than nonflushers. Alternatively, the buildup of acetaldehyde may be due to slower elimination of acetaldehyde. This latter seemed more likely to Chan in his review, but it can not be taken as certain. However, as Chan goes on to note, there is also some information suggesting that atypical alcohol dehydrogenase (ADH) may also be involved, since many of those with ADHLI deficiency also have the atypical ADH.

The genetic correlates of the flushing reaction are also not clear. As Johnson et al. (1984) have suggested and as this chapter shows, there are suggestions of familial resemblances in flushing, but the data are based largely on self-reports. There is great variability from study to study in terms of reported rates of flushing among respondents and among the blood relatives of these respondents. As Chan notes, this is an area that obviously needs further research, and one that could benefit from sources of data on flushing other than the self-reports of respondents.

What can be said with a good deal of certainty, of course, is that the flushing reaction is real and that it occurs much more frequently in Asian than in Caucasian populations. Still, there is variation in reported rates among Asian peoples, which vary from 47 percent to over 85 percent in studies cited by Chan. In the present paper the reported rates are somewhat lower. Some researchers (Schwitters et al. 1982) have distinguished between "fast" and "slow" flushers and have suggested that the proportions of these flusher types may vary from population to population even among Asian groups. And as Chan's review makes clear, variation among different groups of Native Americans in terms of flushing reactions is even greater than the variations among the groups studied in the Far East. Further, the physiological correlates of the flushing reaction also vary among Native Americans, as Rex et al. (1985) have shown. However, it is also true that variations in question wording and in the way in which flushing has been defined in various studies may have affected the apparent rates. Thus it seems fair to say that further work is needed in this area, and that while subjective reports of flushing have provided much of what we know now about the extent and the behavioral correlates of flushing, more objective data will be very welcome.

Facial Flushing

As noted above, there are a number of physical reactions to drinking alcohol thought to be associated with facial flushing. Some of what is known or suspected about this is based on biochemical research; some is based on respondents' reports of things they have noticed in themselves or in others when drinking. Both sources of information have their uses and their flaws. Here we rely on respondents' reports in our attempt to see what kinds of reactions seem to be correlated. As will be seen, this consists of noting what other reactions reportedly occur among people who report rapid facial flushing upon drinking even small amounts of alcohol. As noted, the idea of "slow flushing" has been mentioned in the literature, but survey methods may not be the best way of sorting out a relatively slow reaction of this kind from a rapid reaction. The difficulty, of course, is that facial flushing and many of the other reactions commonly occur in drinking populations that are not marked by atypical isozymes of acetaldehyde dehydrogenase. Facial flushing may be relatively slower in this latter group and may require larger doses of alcohol, but peripheral vasodilation does occur. Thus respondents' reports that they sometimes get flushed in the face after drinking are not sufficient for present purposes. What we have tried to do here is to devise a means of separating out those respondents who seem to describe the flushing reaction we are interested in, and to compare them to "all others"—and that latter group may well contain people who are slow flushers and people whose flushing is due to ordinary vasodilation in response to drinking alcohol, and perhaps many others who either do or do not flush, but who never noticed since it did not seem important to them or to those around them.

In the surveys of Americans of Japanese ancestry living in California and Hawaii, and of Japanese living in several sites in Japan, a series of questions on possible flushing reactions were asked. The reactions are listed in table 1 together with the proportions of current drinkers or ex-drinkers who reported that a given reaction always happens when they drink alcohol, sometimes happens, never happens, or they do not know whether or not it happens. The table clearly shows that facial flushing is the most common of these possible reactions, and flushing elsewhere on the body is next most common in the population samples in these studies. It also shows that these reactions to alcohol are indeed more common in the people of Japanese ancestry than in those in the Caucasian sample. As we will see, no one of the 12 possible reactions alone is a good predictor of drinking patterns. However, among those who always flush immediately upon drinking even small amounts of alcohol, heavier drinking is slightly less common than among all other drinkers combined. Further, this pattern of reported reactions to alcohol is quite common among the Japanese and Americans of Japanese ancestry and rare among Caucasians, as we will detail below. First, however, some observations on the various flushing reactions in our four study populations may be useful.

Table 1 contains the percentages of males and females in each of the 4 groups who reported that they always, sometimes, or never had any of the 12 reactions upon drinking alcohol. The percentages for those who do not know whether they had a reaction or not are also given, for that is a meaningful answer to questions of this kind. The first item in the series asked, "When you drink an alcoholic beverage, do you . . . become flushed in the face?" This item most strongly differentiates the Caucasians from the three

Table 1.—Summary of 12 flushing reactions among drinkers and ex-drinkers by sex in four study sites (in percent)[a]

Responses to questions[b]	Japanese American—Santa Clara										Caucasians—Santa Clara									
	Men (N=235)					Women (N=223)					Men (N=243)					Women (N=243)				
	A	S	N	Dk	Total	A	S	N	Dk	Total	A	S	N	Dk	Total	A	S	N	Dk	Total
Flushed in face	33	29	36	2	100	37	27	30	7	100	2	18	74	5	99	7	24	66	3	100
Flushed elsewhere	10	12	57	21	100	12	11	55	22	100	0	2	93	6	101	2	4	91	4	101
Feel itchy	4	9	84	3	100	5	7	84	4	100	[c]	2	96	1	99	[c]	4	94	1	99
Become dizzy	3	30	63	3	99	6	31	59	4	100	1	28	69	1	99	2	24	73	1	100
Become drowsy	9	57	33	1	100	10	54	32	4	100	5	48	46	1	100	9	43	47	1	100
Become anxious	1	15	78	6	100	1	12	80	8	101	2	11	85	2	100	2	8	88	2	100
Get a headache	6	43	51	0	100	8	32	54	6	100	2	31	66	2	101	3	31	66	1	101
Feel pounding in head	7	35	58	[c]	100	7	23	65	5	100	1	13	84	2	100	1	13	84	1	99
Perspire	4	23	65	7	99	3	17	75	4	99	[c]	13	85	2	100	2	13	84	1	100
Fast heart beat	14	33	44	10	101	14	22	58	6	100	0	19	80	1	100	3	20	75	3	101
Become nauseated	4	31	65	1	101	3	23	71	3	100	[c]	27	71	1	99	1	20	78	1	100
Feel weak	4	25	70	2	101	2	16	76	6	100	1	12	86	1	100	3	13	83	1	100

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[a] Both percentages *and* totals are weighted figures in U.S. samples. Japanese data are unweighted.

[b] Responses to questions: A = always; S = sometimes; N = never; and Dk = don't know.

[c] Indicates less than 0.5 percent.

Table 1.—Summary of 12 flushing reactions among drinkers and ex-drinkers by sex in four study sites (in percent)—Continued

Responses to questions	Japanese Ancestry—Oahu										Japanese									
	Men (N=232)					Women (N=213)					Men (N=542)					Women (N=417)				
	A	S	N	Dk	Total	A	S	N	Dk	Total	A	S	N	Dk	Total	A	S	N	Dk	Total
Flushed in face	30	26	39	5	100	35	30	31	4	100	46	25	29	1	100	39	20	40	2	101
Flushed elsewhere	12	11	65	12	100	19	8	58	15	100	26	18	50	6	100	19	8	65	8	100
Feel itchy	2	9	88	2	101	6	7	85	1	99	2	5	91	2	100	3	5	89	3	100
Become dizzy	2	30	64	4	100	3	29	66	2	100	1	6	90	3	100	[c]	9	87	3	99
Become drowsy	9	51	39	[c]	99	7	45	46	2	100	24	52	23	[c]	99	16	46	35	2	99
Become anxious	3	20	72	5	100	[c]	15	81	4	100	[c]	1	96	2	99	0	1	96	3	100
Get a headache	2	41	55	1	99	7	32	58	3	100	2	25	70	2	99	2	16	78	3	99
Feel pounding in head	3	32	64	[c]	99	5	23	69	2	99	2	14	82	2	100	2	9	85	4	100
Perspire	2	18	76	4	100	4	18	73	5	100	4	20	72	4	100	3	14	79	4	100
Fast heart beat	9	29	53	10	101	12	27	57	4	100	9	27	62	2	100	11	22	65	3	101
Become nauseated	2	34	63	1	100	4	26	67	3	100	[c]	27	71	2	100	[c]	15	82	3	100
Feel weak	3	18	77	2	100	5	17	75	3	100	2	17	77	4	100	4	26	67	3	100

[c] Indicates less than 0.5 percent.

samples of people of Japanese ancestry. About a third of the latter say they always flush in the face upon drinking while few of the Caucasians do. However, the answer "sometimes flush" in the face does occur with some frequency among the Caucasians, especially among the women. Thus, while the distributions of responses to this question are clearly different for the Caucasians than for the other groups, there is some overlap. Some of the other items do not discriminate at all well between Caucasians and those of Japanese ancestry, as the tabled figures show.

The second item asked about "flushing elsewhere on the body," and this item also discriminates between the samples of Caucasians and people of Japanese ancestry. However, note that fewer respondents in all groups say that this reaction "always" happens to them upon drinking, as compared to facial flushing. Further, few in any group report this "flushing elsewhere" who do not also report facial flushing: six Caucasians (1 percent) do so and even fewer of those of Japanese ancestry (data not shown). Thus the second item in the series adds little to what was learned from the first about differing rates of flushing in the study populations.

A third item of particular interest in this series is the 10th in the list, which asks "When you drink do you . . . feel your heart beat faster or harder?" Between 9 and 14 percent of those of Japanese descent reported that this always happens to them when they drink, as compared to none of the men and only 3 percent of women among Caucasians.

While almost all the items shown in table 1 are affirmed by relatively more of those of Japanese ancestry than by Caucasians, in some cases the size of the percentage differences are not great. In other cases, the percentage of each group affirming the reaction differs substantially, but the percentage of positive cases is low in comparison to facial flushing. In still other cases, the proportion of people reporting the reaction who also report they never experience facial flushing upon drinking is relatively great. Becoming drowsy after drinking is one such item; for instance, fully 18 percent of Japanese Americans on Oahu reported they never experience facial flushing upon drinking but do become drowsy after drinking at least sometimes—as compared to 34 percent of Caucasians. Similarly, 11 percent of Japanese Americans in Santa Clara reported headaches at least sometimes after drinking, as did 18 percent of Caucasians. Thus the possibility exists here that at least some of these reports are reactions to alcohol but are not necessarily the flushing reaction that is the focus of this work. Lacking any means of determining which respondents are deficient in one isozyme of acetaldehyde dehydrogenase and which are not, we are reduced to searching for structure among responses to the 12 items asking about reactions to alcohol. A factor analysis was the first technique to be used in this search.

Factor Structures

As shown in table 1, respondents were asked about 12 possible reactions to drinking alcohol. Facial flushing is, of course, the most commonly reported reaction, but others are also reported by varying numbers of respondents. For each possible reaction in the list, respondents could indicate that it always happens to them when they drink, or that it sometimes happens, or never happens, or that they do not know whether or not it happens to them when they drink. We sought to find a simple structure in the responses to these 12 questions about possible reactions to alcohol by means of factor analysis. We would have been pleased to find a pattern of a few reactions that commonly accompany facial flushing—and did so in all three samples of people of Japanese ancestry. A first attempt (data not shown) collapsed the responses into a dichotomy of "never happened" versus "sometimes or always happens." This was not useful; the varimax rotation produced too few factors with many variables loaded on each. The responses of the Caucasian sample from Santa Clara County, for instance, when subjected to the varimax rotation fell into 2 factors with 7 of the 12 variables loaded on the first factor. Similarly, the sample from Oahu yielded a varimax solution containing three factors, and the variables on the first factor included reactions such as nausea, headaches, and other things that can occur to any drinker who drinks a lot of alcohol on an occasion. But the factor also included reactions such as facial flushing that we have come to think of as immediate reactions to even small amounts of alcohol (although the literature now also speaks of "slow flushers").

Our intent was thus to find a simple structure in reactions that accompany facial flushing upon drinking, and the factor solution above of few factors each composed of many variables was not especially illuminating. On pragmatic grounds alone, we undertook a second analysis in which one-half of the dichotomy was a report that a given reaction "always happens" and the other was "sometimes or never happens" upon drinking an alcoholic beverage. The results of varimax solutions for each of four study sites are shown in table 2.

Ideally, a factor analysis will reduce many variables to a few factors that permit us to think clearly about an underlying structure. However, often

Table 2.—Varimax factor analysis of 12 reactions to alcohol in 4 study sites.
(Loadings less than 0.5 omitted for clarity.)

	Japanese ancestry, Santa Clara			
	Varimax factor pattern			Final communality estimates
Variables	1	2	3	
Became dizzy	709			.53
Pounding in head	688			.72
Get a headache	684			.64
Perspire	566			.33
Become drowsy				.22
Flush, not on face		744		.62
Facial flushing		700		.53
Fast heartbeat		604		.51
Become anxious		541		.46
Feel itchy				.39
Feel weak			912	.84
Nauseated, physically ill			907	.83
Variance explained	2.51	2.06	2.04	6.62

Table 2.—Varimax factor analysis—Continued

	Caucasians, Santa Clara					
	Varimax factor pattern					Final communality estimates
Variables	1	2	3	4	5	
Get a headache	788					.70
Pounding in head	748					.63
Become dizzy	569					.59
Feel weak						.69
Flush, not on face		787				.70
Facial flushing		778				.42
Fast heartbeat						.66
Feel itchy			706			.68
Perspire			656			.56
Nauseated, physically ill				768		.50
Become anxious				536		.68
Become drowsy					803	.65
Variance explained	1.83	1.74	1.42	1.32	1.14	7.46

Table 2.—Varimax factor analysis—Continued

	Japanese ancestry, Oahu					
	Varimax factor pattern					Final communality estimates
Variables	1	2	3	4	5	
Flush, not on face	788					.70
Facial flushing	751					.67
Feel itchy	719					.70
Get a headache		919				.88
Pounding in head		905				.85
Feel weak			794			.76
Become dizzy			654			.51
Become drowsy			629			.49
Nauseated, physically ill			568			.61
Perspire				923		.85
Fast heartbeat						.58
Become anxious					792	.66
Variance explained	1.99	1.99	1.90	1.26	1.12	8.28

Table 2.—Varimax factor analysis—Continued

Variables	Japanese			
	Varimax factor pattern			Final communality estimates
	1	2	3	
Pounding in head	859			.77
Got a headache	845			.78
Nauseated, physically ill	726			.64
Become dizzy	615			.59
Flush, not on face		798		.68
Facial flushing		763		.59
Fast heartbeat		616		.51
Become drowsy		614		.38
Become anxious			651	.67
Feel itchy			593	.41
Perspire			583	.38
Variance explained	2.90	2.26	1.51	6.68

the factors revealed call for a creative imagination on the analyst's part as he or she "makes sense of" the factor patterns after the fact. Such a creative effort is difficult in this case, for we have not one, but three, samples of people of Japanese ancestry. We expected that these samples would not differ greatly in terms of other reactions that accompany the facial flushing reported by respondents. We also expected the Caucasian sample to be as different from the others in a factor structure as it was in the proportions of respondents affirming various possible flushing reactions. A comparison of the results of the four factor analyses indicates things are not so simple.

First, in the sample of Americans of Japanese ancestry in Santa Clara County several variables (perspire, become drowsy and feel itchy) are low in communality. On the basis of that sample, one would consider dropping these items. They are not low in the factor analysis of the Oahu sample; in fact, none of the variables is low in communality in that sample. However, these same three variables are low in communality in the sample from Japan. Thus the lightest drinking sample and the heaviest resemble each other in this respect, and only the Hawaiian sample differs substantially. In the sample of Caucasians these same three variables are not markedly low, but the facial flushing reaction is quite low in communality ($h2=.42$).

In terms of factor structure, note that in the sample of Americans of Japanese ancestry in Santa Clara County, the second factor includes the reactions of facial flushing, flushing elsewhere on the body, a rapid heartbeat, and a feeling of anxiety. The sample from Hawaii produced a factor structure in which facial flushing and flushing elsewhere on the body were on the first factor but also included "feeling itchy," which the Santa Clara results did not. The sample from Japan again included the two flushing reactions and reports of fast heartbeat on the second factor. It also included feeling drowsy, which the other factor analyses did not include. In the Caucasian sample only the two items on flushing fell into a second factor, and we note again that this sample differed greatly from the others in terms of the frequency of affirmative responses to many of the questions (in table 1).

In other respects these factor analyses seemed commonplace. Kaiser's Mean sampling adequacy was an acceptable 0.74 for Japanese Americans in Santa Clara, 0.77 for the Japanese, and 0.71 for the Oahu sample. Only the Caucasian sample was low—a barely acceptable 0.59. The variances accounted for are unremarkable, being about 55 percent for the samples from Japan and for the sample of Japanese Americans in Santa Clara, about 62 percent for the Caucasian sample, and about 69 percent for the analysis of the Oahu sample. Had we looked at but one of the three analyses of those of Japanese ancestry, we might have taken the factors as indicative of which reactions go with which others; given that we found little in common across the three study sites beyond the association between facial flushing and flushing elsewhere on the body, we are unable to do this. However, even this association was not illuminating, for the item on flushing elsewhere on the body adds little to the analysis of these data, since almost all those who flush on the body also flush on the face. Another approach was needed.

A Typology of Flushing

The data on hand are respondents' reports of their experiences; they are subject to errors of several kinds. One's expectations concerning flushing may well influence its appearance or its perception. Among people of Japanese ancestry the reaction is common, and it is well known to be common. This, we would guess, might lead to increased reports of flushing. Among the Caucasians, the response is less well known and much less common. We suspect that the commonest facial flushing among Caucasians is another phenomenon, one that takes much longer and that requires larger amounts of alcohol as contrasted with the very rapid flushing in response to small amounts of alcohol reported by many Japanese respondents. What to expect is less clear in the case of the Caucasians, then, for some of them may think they are flushers when they are not—at least not as the Japanese use that term. On the other hand, since we believe that few Caucasians are even aware of the possibility of the flushing reaction as an immediate reaction to small amounts of alcohol, there may be Caucasians who are in fact flushers but who never noticed. As we will see below, the strength of the reaction seems to vary, and it is not an overpoweringly strong reaction for many drinkers. It is thus possible that some flushers are not aware of their reaction.

Clearly, then, the use of survey data on flushing will not tell us unambiguously how many flushers there are in a given study population. What survey data can do is to give us some data on people who have decided they are flushers, and we are able to divide these people into several categories corresponding with the speed of their supposed reaction. We think that those who reported they always flush immediately upon drinking even small amounts of alcohol probably include a higher proportion of "true flushers" than any other group we could define with these data. Therefore, we will contrast these people in each study group with all others in that group to show the correlates of the flushing reaction in that group. We will also contrast the flushers and nonflushers in one study group with those in other groups to see if the patterns of correlates of flushing are similar across the groups sampled. As we will see below, this analysis of respondents' reports on the flushing reaction is complex, is suggestive, and contains some puzzles. Some details on the construction of the typology are needed at this point.

Although in other respects the factor patterns given above differ substantially between the study populations, the findings do suggest that flushing can be differentiated from other reactions to alcohol, and that facial flushing and flushing elsewhere on the body are tied together in these three populations. However, as we saw above, the item on flushing elsewhere on the body does not add positive cases to the question on facial flushing. This suggested that we might proceed to testing a typology of flushing with which to contrast the four study groups, a typology that would be based on facial flushing but with the additional requirement that the reaction be rapid or in response to small amounts of alcohol. This was done as follows: "flushers," as we shall call them for the moment, will include only those who reported that they always experience facial flushing upon drinking, and that they flush immediately. "Flushing immediately" here means either a response of "immediately" to a question asking that, or a report that flushing takes place within 10 minutes of drinking, or a report of flushing after two drinks or less. Table 3 indicates that this definition of flushing has at least heuristic value. For instance, about 30 percent of both groups of Americans of Japanese ancestry are flushers by the definition just given, and over 40 percent of the Japanese—this in contrast to 4 percent of the Caucasian group. (The N of this group is but 19 cases; thus percentages are not shown where less than 15 respondents answered a given question. The figures in parentheses are the numbers of cases in each cell in the table.)

Comparisons of the flushers to nonflushers in the two groups of Japanese Americans, and in the Japanese samples combined, indicate that those who flush are relatively less often heavier drinkers. Only those who do use alcohol at least as often as once a year are included here, and in all three of these study groups flushing is negatively related to amount of alcohol consumed in the past 2 weeks of drinking ($p<.05$). Among the Caucasians there are too few cases to be relied on; however, the relationship is in the same direction.

The second entry in table 3 contains data on the frequency of drinking any kind of alcoholic beverages. Here again, only those who are current

Table 3.—Flushers and nonflushers among current drinkers by various measures in four study sites (percent)[a]

Measure	Japanese Americans, Santa Clara		Caucasians, Santa Clara		Japanese Americans, Oahu		Japanese	
	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers
Flushers and nonflushers at each study site:								
N	289	120	419	19	264	113	536	385
Percent	71	29	96	4	70	30	58	42
Amount of alcohol in last 2 weeks of drinking:								
Less than 7 oz	82[b]	96	73	(14)	74[b]	88	54[b]	63
7 to 21 oz	14	4	23	(2)	19	11	23	23
21+ oz	4	0	4	(0)	7	1	23	14
Total	100	100	100		100	100	100	100
Frequency of drinking any alcoholic beverages:								
More than 3 times a week	23[b]	10	36[b]	10	26[b]	9	50[b]	36
Once or twice a week	19	15	25	18	24	13	16	15
2 to 3 times a month	16	19	13	31	12	18	12	16
Once a month	8	13	10	16	10	8	8	10
6 to 11 times a year	12	7	5	0	10	12	5	6
1 to 5 times a year	22	36	10	24	18	41	9	17
Total	100	100	99	99	100	101	100	100

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[a] Both percentages and totals are weighted figures in U.S. samples. Japanese data are unweighted. See samples section in text for details. Figures in parentheses are number of cases.

[b] Differences between adjacent distributions significant at .05 level.

Table 3.—Flushers and nonflushers among current drinkers by various measures in four study sites (percent)—Continued

Measure	Japanese Americans, Santa Clara		Caucasians, Santa Clara		Japanese Americans, Oahu		Japanese	
	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers
Frequency of getting drunk:								
Never	49[b]	65	56	(10)	53[b]	67	44[ns]	50
Not in last 12 months	20	18	7	(1)	13	17	15	14
1 to 11 times a year	25	14	28	(3)	25	11	26	26
Once a month or more	5	3	10	(1)	9	6	14	10
Total	99	100	101		100	101	99	100
Frequency of drinking enough to feel effects without getting drunk:								
Never	17[ns]	16	27	(1)	25	29[ns]	6[ns]	5
Not in last 12 months	13	7	3	(0)	9	4	4	4
1 to 11 times a year	43	42	34	(8)	31	37	26	31
Once a month or more	27	35	36	(6)	34	29	62	59
Total	100	100	100		99	99	98	99
Can you continue to drink after flushing begins?[c]								
Yes	82[ns]	77	75[ns]	79	82[ns]	73	71	73
No	13	19	23	14	15	21	13[b]	22
Don't know	4	4	2	7	3	6	16	4
Total	990	100	100	100	100	100	100	99
N	126	120	92	15	113	112	254	384

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[b] Differences between adjacent distributions significant at .05 level.

[c] Question asked only of those who reported any of the 12 reactions to alcohol. This is *not* the same as the immediate facial flushing used to define "flushers" in this table's heading. See text for details.

Table 3.—Flushers and nonflushers among current drinkers by various measures in four study sites (percent)—Continued

Measure	Japanese Americans, Santa Clara		Caucasians, Santa Clara		Japanese Americans, Oahu		Japanese	
	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers
How would you describe your father's reaction to drinking alcohol?								
Flusher	28[b]	55	15[ns]	23	25[b]	52	40[b]	57
Nonflusher	42	20	40	18	46	17	40	22
Don't know	29	25	45	60	29	30	19	21
Total	99	100	100	101	100	99	99	100
N[c]	289	120	407	15	264	113	533	382
How would you describe your mother's reaction to drinking alcohol?								
Flusher	24[b]	39	12[ns]	14	19[ns]	22	27[ns]	30
Nonflusher	27	16	35	34	25	19	25	17
Don't know	48	45	53	52	56	59	47	52
Total	99	100	100	100	100	100	99	99
N[c]	289	120	407	15	264	113	512	369

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[b] Differences between adjacent distributions significant at .05 level.

[c] Question asked only of those who reported any of the 12 reactions to alcohol. This is *not* the same as the immediate facial flushing used to define "flushers" in this table's heading. See text for details.

Table 3.—Flushers and nonflushers among current drinkers by various measures in four study sites (percent)—Continued

Measure	Japanese Americans, Santa Clara		Caucasians, Santa Clara		Japanese Americans, Oahu		Japanese	
	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers	Non-flushers	Flushers
How many of your brothers/sisters/sons/daughters experience flushing after drinking? Percentages are of all those with the corresponding relative:								
Brothers who flush	39^b	60	11	(2)	37^b	64	54^b	77
N	225	105	269	8	208	88	393	297
Sisters who flush	24^b	53	14	(1)	22^b	40	33^b	53
N	217	89	289	11	203	88	363	263
Sons who flush	13^b	34	4	(1)	14^{ns}	17	26^b	43
N	89	50	157	8	106	41	254	188
Daughters who flush	15^b	30	6	(5)	16^{ns}	11	12^b	30
N	89	46	161	8	97	38	222	183

[b] Differences between adjacent distributions significant at .05 level.

drinkers are compared. The frequency of drinking is a separate question from amount of alcohol consumed in the past 2 weeks of drinking. The possibility exists that those who flush will drink as much per occasion as those who do not flush, but will drink less often. However, the second entry in table 3 indicates that this is not the case. In each of the study groups, those who reported they flush immediately upon drinking include relatively fewer frequent drinkers than the nonflushers. Thus both frequency of drinking and amount of alcohol drunk in the past 2 weeks of drinking are negatively related to the flushing reaction as defined for this section.

A separate question asked respondents how often they drank "enough to feel the effects without actually getting drunk," and then asked, "And how often in the last year would you say you got drunk?" The terms "feel the effects" and "drunk" were not defined and mean whatever respondents chose to mean by them. Frequency of drunkenness is negatively related to the flushing reaction in both groups of Americans of Japanese ancestry, and again the difference is significant at the .05 level. Among the Japanese the expected relationship is not significant. Again, the Caucasian flushers are too few in number for a useful comparison to be made.

The question about "feeling the effects without becoming drunk" does not show a significant difference between flushers and nonflushers in any of the study groups. Why it does not is a matter for speculation, but at best the question is ambiguous in this context, for flushing rather than slight intoxication may account for the affirmative responses among the flushers.

We have seen that even among current drinkers those who flush are relatively less frequent drinkers and relatively lighter drinkers. They also report relatively less frequent drunkenness (whatever that term means to them). However, the fifth entry in Table 3 suggests that the influence of flushing on drinking is not overwhelming. Current drinkers who said yes to any of the 12 reactions to drinking were also asked whether they could continue to drink after flushing begins. Thus, in this entry to the table, we are comparing those who do not flush immediately but who do report one or more of the other reactions to alcohol to those who do flush immediately upon drinking. These are still labeled "nonflushers" and "flushers" respectively in table 3. Among the Americans of Japanese ancestry from Santa Clara County, the nonflushers include 82 percent who say they can continue to drink. The proportion of flushers who say they can continue to drink is not significantly less—77 percent. Similar findings are seen in all four study groups. (However, among the Japanese alone, the proportion who say they cannot drink after flushing is significantly greater among flushers.) The striking fact here is that very large majorities of both flushers and nonflushers can continue to drink. Had we asked only this question, we might have missed the fact that the flushing reaction is indeed related to amount of drinking per occasion and to frequency of drinking.

The final data contained in table 3 deal with the respondents' reports of the flushing reaction among their close relatives. The results indicate two things: First, flushers are much more common among relatives of the Americans of Japanese ancestry and among Japanese than among the Caucasians in the study. Second, those who themselves flush immediately upon drinking reported more flushing among close relatives than do those who do not flush immediately or who do not flush at all.

A first question asked for this was, "How would you describe your father's reaction to drinking alcohol?" Note that the results from the two Japanese American groups are nearly identical, while the Japanese reported higher proportions of fathers who flushed. Less than a third of Japanese American respondents did not know whether their fathers flushed or not, as compared to over 50 percent of Caucasian respondents who gave that response. Again in both Japanese and in Japanese American groups, over 50 percent of those who are themselves flushers reported that their fathers were also flushers. The corresponding figures for the Caucasian group are much lower, and the difference between the flushing and nonflushing Caucasian respondents in terms of fathers' flushing is not significant (15 percent and 23 percent, respectively).

Respondents were also asked about their mothers' reactions to drinking alcohol. Note first that very substantial proportions of all study groups reported that they did not know whether their mothers flush in reaction to alcohol or not. In large part, this may be due to abstinence among women in the generation past. However, the Japanese group and the two Japanese American groups do contain significantly more people whose mothers flushed than does the Caucasian group. Somewhat surprisingly, it is only among the Americans of Japanese ancestry in Santa Clara that a difference between the flushers and nonflushers can be found; among the nonflushers, 24 percent of their mothers were known to flush upon drinking, as compared to 39 percent among the flushers. The difference between flushers and nonflushers among the Japanese Americans on Oahu is small and nonsignificant as it is also among the Japanese. Among the Caucasians in the sample, there are no differences between flushers and nonflushers in this respect.

The next entries in table 3 provide detail on the flushing of other relatives. Here again, substantial differences between flushers and nonflushers can be seen, as can a difference between the Caucasian groups and the Japanese or those of Japanese ancestry. However, the results here, as above, are not clearcut.

The basis for comparison of flushing among relatives is, of course, only among those who have a relative of a given sort; this accounts for the variation in the numbers of cases shown. Second, the respondent must know whether the relative referred to flushes or not, which implies that the relative must have tried drinking in the respondent's presence. The percentages given are simply the percentages who are known to be flushers among all those respondents who have relatives of the given type. First, respondents who reported that their brothers flush are much more common among the Japanese and Japanese American groups than among the Caucasians. Second, those respondents who are themselves flushers report significantly more flushing among their brothers than did the nonflushers. The number of nonflushing Caucasians with brothers is too few to consider here. The same general pattern may be seen among the study groups in response to the question concerning sisters' flushing, but note that the proportion of sisters known to flush is substantially lower than the proportion of brothers known to flush. Again, this may have to do with the proportions of drinkers among brothers as compared to sisters. In both the Japanese and Japanese American groups, those who flush have significantly more sisters who flush than is true for the non-flushers. There is little difference between the residents of Oahu and Santa Clara in this respect, and, as noted, both groups report more sisters who flush than the Caucasians reported.

Reports of flushing among the sons and daughters of respondents are much less clear, although both Japanese American groups reported more flushing among their children than the Caucasians did. However, flushers and nonflushers among the Japanese Americans from Oahu and among the Caucasians do not differ in the proportion reporting that their sons and daughters flush. Note also that the proportion of flushing sons is about equal to the proportion of reports of daughters who flush. This differs from what was seen above regarding the flushing of relatives where more brothers than sisters were known to be flushers, and more fathers than mothers.

The data considered above leave little doubt concerning the difference between Caucasians and Americans of Japanese ancestry in terms of flushing. Given a restrictive definition of flushing that requires an immediate reaction to even a small amount of alcohol, the proportion of flushers among the latter group is overwhelmingly greater than among the Caucasian group. In pursuing this difference, the consideration of flushing among relatives of flushers indicates that the flushing is much more often found among Japanese Americans than Caucasians, but the magnitude of the differences is less overall and less consistent than was the case when only the alcohol reactions of the respondents themselves was considered. Is it the case that the flushing response is less common among the relatives than among the respondents? Or is it the case that people do not know about others' reactions, but do know about their own? The proportions of people who say they do not know about the reactions of their relatives to alcohol are substantial (and more so among the Caucasians), but even more detailed analysis of these data will not clear up the remaining ambiguity. Further analysis is called for. Some obvious possibilities in this regard are different definitions of flushers as alternatives to the requirement of immediate flushing that was used above. "Slow flushers" or at least "slower flushers" may indeed be manifesting an acetaldehyde reaction, but they may prove difficult to separate out with the questions and techniques of survey research (c.f. Schwitters et al. 1982).

Perhaps the major reason for interest in the flushing reaction has to do with its possible relationship to patterns of alcohol use. Despite the limitations of the survey methods, it seems possible to conclude that those who are flushers as defined above drink less alcohol and drink less often than nonflushers. They reported less frequent drunkenness than nonflushers. However, it is also necessary to remember that all the above findings are among current users of alcohol, and that the great majority of these people who drink and flushed report that they can continue to drink after flushing has begun. A future analysis should consider the possibility that more extreme alcohol reactions involving nausea, headaches, etc., will influence alcohol use even more strongly than facial flushing does. However, the rarity of these stronger reactions and the fact that such things were not strongly associated with facial flushing in the factor analyses suggests that the explanatory power of the other reactions will not be great for the population as a whole.

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A Hispanic Perspective

Drinking Patterns and Problems in Madrid

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These preliminary findings come from a large regional survey of the general population, ages 18 and older, residing in the Autonomous Region of Madrid. This study is part of a larger effort by the Regional Health Ministry of Madrid to learn about the drinking practices and alcohol-related problems of its inhabitants. The knowledge derived from this study will be used to plan health and social services focused on reducing the prevalence of alcohol misuse and alcohol dependence. In addition, due to the comparative nature of the survey instrument used, the data will also be useful in providing insight into cross-cultural differences in drinking patterns and problems.

Data were collected in October 1985 through personal interviews with 1,638 males and 1,862 females. The study sample was selected using multistage stratified random sampling of areas, the random route method for localization of housing units, and the KISH method for the identification of respondents. The overall survey response rate was 73 percent.

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The instrument used for data collection was developed by the Alcohol Research Group and adapted for use in the Spanish population. The advantages in using this instrument include the history of use of many of the alcohol consumption questions and the possibility for international comparisons of alcohol drinking patterns, attitudes, and alcohol-related problems (Cahalan 1970).

Alcohol Drinking Patterns

The typology of drinking patterns used in the analysis is identical to that used by the Alcohol Research Group in their analysis of the 1984 National Survey of Alcohol Consumption and Drinking Problems. In summary, the typology is based on the combination of information regarding both the quantity and frequency of alcohol consumption (Cahalan et al. 1974).

In general, the data from the study suggest (table 1) that the pattern of alcohol consumption in the region of Madrid can be described as frequent low maximum consumption. This drinking pattern, which characterizes individuals who drink at least once a week but never have five or more drinks, accounts for 43 percent of the study respondents. Given the high clustering of the respondents in this drinking category, it is not surprising that only 11 percent of those interviewed reported they were abstainers.

At the other end of the drinking spectrum is found the category of frequent heavy drinkers, or respondents who drink at least once a week, and drink five or more drinks of alcohol. This drinking practice characterized 9 percent of the study population.

It should also be noted that the drinking patterns of less frequent high maximum drinkers and infrequent high maximum drinkers account for less than 1 percent of the total sample. Although these drinking patterns do not add much to the description of the drinking patterns of the study population, they have not been removed from most of the tables presented in order to provide greater similarity between the tables presented by other countries using the same typology.

With respect to the quantity of alcohol consumed and independent of the frequency of consumption, it can be said that 68 percent of current drinkers consume low quantities of alcohol (less than five drinks) while 22 percent drink high quantities of alcohol (more than five drinks).

Table 1.—Drinking patterns, in percent, for the general population sample (N=3,500)

	Amount		
Frequency	Never drinks five or more drinks	Drinks five or more drinks at least once a year	Drinks five or more drinks at least once a week
3 or more times/day Once a day Nearly every day 3–4 times/week 1–2 times/week	Frequent low maximum drinker 43%	Frequent high maximum drinker 12%	Frequent heavy drinker 9%
2–3 times/month Once a month	Less frequent low maximum drinker 14%	Less frequent high maximum drinker 1%	▥
Less than once a month but at least once a year	Infrequent low maximum drinker 11%	Infrequent high maximum drinker 0%	▥
Less than once a year	Abstainer 11%	▥	▥

Drinking Patterns by Sex

If drinking patterns are viewed by sex (table 2), significant differences in the distribution of drinking patterns can be observed. Fewer men (4 percent) report they are abstainers than women (17 percent). In general, women are more likely than men to be represented among less frequent and infrequent drinkers of low quantity. On the other hand, more men tend to be found among frequent high maximum drinkers and frequent heavy drinkers. In the latter drinking pattern, five males are found for every female. With respect to the most common drinking pattern, frequent drinkers of low quantity, males slightly outnumber females (46 percent and 41 percent respectively).

Drinking Patterns by Sociodemographic Characteristics

The cross-tabulation of drinking patterns by other sociodemographic characteristics presents a different perspective on the distribution of drinking patterns. If the age distribution is considered (table 3), a decrease in frequent heavy drinking is found with increasing age. For example, frequent heavy drinking is found to be more prevalent among males 18-29 years of age, for whom this pattern of drinking accounts for 24 percent of this age group. Among those 60 years and older, however, only 10 percent can be classified as frequent heavy drinkers. Young males (30 percent) are also much more likely than older males, 60 years and older (6 percent), to report frequent high maximum consumption of alcohol. This trend also holds true for other drinking patterns.

Although the pattern of frequent heavy drinking accounts for only 3 percent of the females studied, a decrease in this drinking pattern also occurs with increasing age. Among females 18-29 years, 6 percent are considered frequent heavy drinkers compared to 1 percent of those 50-59 years of age and less than 0.5 percent of those 60 years and over.

Similar to the findings observed among the males, frequent high maximum drinking is much more prevalent among young females (15 percent) than among older females (1 percent).

When considering abstainers, a notable increase with age is found among females. Abstainers account for only 10 percent of young females, compared to 17 percent of those 50-59 years and 35 percent of those 60 years

Table 2.—Drinking patterns, in percent, by sex, for the general population sample (N=3,500)

	Amount		
Frequency	Never drinks five or more drinks	Drinks five or more drinks at least once a year	Drinks five or more drinks at least once a week
3 or more times/day Once a day Nearly every day 3–4 times/week 1–2 times/week	Frequent low maximum drinker Males 46% Females 41%	Frequent high maximum drinker Males 18% Females 6%	Frequent heavy maximum drinker Males 16% Females 3%
2–3 times/month Once a month	Less frequent low maximum drinker Males 8% Females 19%	Less frequent high maximum drinker Males 1% Females 1%	
Less than once a month but at least once a year	Infrequent low maximum drinker Males 8% Females 13%	Infrequent high maximum drinker Males 0% Females 0%	
Less than once a year	Abstainer Males 4% Females 17%		

Table 3.—Drinking patterns by age and sex

	Age group				
	18-29	30-39	40-49	50-59	60+
	MALES				
	(N=440)	(N=321)	(N=290)	(N=278)	(N=308)
Abstainers	4	2	3	6	5
Infrequent low maximum drinkers	2	4	6	14	15
Infrequent high maximum drinkers	0	0	0	0	0
Less frequent low maximum drinkers	6	6	10	9	12
Less frequent high maximum drinkers	1	1	[a]	[a]	0
Frequent low maximum drinkers	33	49	51	50	53
Frequent high maximum drinkers	30	20	15	13	6
Frequent heavy drinkers	24	19	15	9	10
	FEMALES				
	(N=499)	(N=398)	(N=326)	(N=274)	(N=364)
Abstainers	10	12	15	17	35
Infrequent low drinkers	7	8	12	21	25
Infrequent high maximum drinkers	0	0	0	0	0
Less frequent low maximum drinkers	19	22	18	24	13
Less frequent high maximum drinkers	1	1	1	0	[a]
Frequent low maximum drinkers	42	49	48	35	26
Frequent high maximum drinkers	15	6	4	2	1
Frequent heavy drinkers	6	3	2	1	[a]

[a] Less than 0.5 percent.

and older. This tendency for an increase in abstainers with age also holds true for infrequent low maximum drinkers, where 7 percent of young females (18-29 years) are classified, compared to 25 percent of older females (60+ years).

An increase in abstention rates with increasing age is *not* observed for male respondents. Among young males 18-29 years, abstention is reported by only 4 percent. This abstention rate is quite similar to that found for 50-59 year olds (6 percent) and those 60 years and older (5 percent).

An overview of drinking patterns for males by age suggests that a shift is made from frequent and high alcohol consumption to frequent and less frequent consumption of low quantities of alcohol. This shift in drinking practices is very different from that observed among females, where a shift is made from frequent and infrequent low consumption patterns to abstention with age. The apparent increase in less frequent drinking as women grow older may reflect in part a cohort of women who consumed low quantities of alcohol at younger ages and who still consume small amounts at present. This cohort effect may also reflect the changing role of women in Spanish society and associated changes in alcohol consumption patterns. Future longitudinal studies are needed to fully understand this shift in drinking practices with advancing age.

Drinking Patterns by Income

Population studies (Walsh 1982) usually indicate that fewer drinkers are found among low income households, although higher proportions of heavier drinkers are also found in this group. The distribution of drinking patterns by income is shown in table 4.

Low income respondents do tend to drink less than the moderate and high income groups. This is particularly noted in the percent distribution of abstainers and infrequent low maximum drinkers, where low income respondents show a prevalence of 17 percent as compared to 9 percent of moderate and 6 percent of high income respondents. Low income respondents do tend to drink less than the moderate and high income groups. This is particularly noted in the percent distribution of abstainers and infrequent low maximum drinkers, where low income respondents show a prevalence of 17 percent as compared to 9 percent of moderate and 6 percent of high income respondents among those classified as abstainers.

Table 4.—Drinking patterns by income level, in percent (weighted)

	Low income (N=1,000)	Moderate income (N=1,528)	High income (N=681)	No response (N=291)
Abstainers	17	9	6	13
Infrequent low maximum drinkers	17	8	7	12
Infrequent high maximum drinkers	0	0	0	0
Less frequent low maximum drinkers	14	14	13	13
Less frequent high maximum drinkers	1	1	[a]	1
Frequent low maximum drinkers	37	44	48	45
Frequent high maximum drinkers	7	14	15	9
Frequent heavy drinkers	7	10	11	7

[a] Less than 0.5 percent.

Among infrequent low maximum drinkers the distribution is similar, 17 percent as compared to 8 percent of moderate and 7 percent of high income respondents. Little difference is observed in the distribution of less frequent low maximum drinkers within income groups.

With respect to frequent high maximum and frequent heavy drinking patterns, low income respondents are not so prevalent as other studies have suggested. However, the great similarity that exists between the distribution of drinking patterns among moderate and high incomes groups is noteworthy.

Given that 8 percent of the study population refused to respond to the question regarding income, nonrespondents were also included in the table. In general, nonrespondents are more prevalent among abstainers and drinkers of low quantities of alcohol and also tend to be slightly heavier drinkers than low income respondents. With respect to the high refusal rate for this question, it should be kept in mind that questions regarding personal income are still considered very intimidating and that the validity of these responses must therefore be questioned.

Drinking Patterns by Employment Status

Among males, frequent heavy alcohol consumption is found to be more prevalent among the unemployed (24 percent) and students/youths (24 percent), compared to the employed (15 percent) and the retired (10 percent) (table 5). Students/youths (30 percent) as well as the employed (20 percent) also tend to be more frequent high drinkers, compared to the unemployed (16 percent) and the retired (6 percent). In general, the retired are found to be best described as frequent low maximum drinkers, with only 16 percent of these being found among frequent high and heavy drinking patterns.

Independent of the frequency of drinking, retired males consume less alcohol compared to the other groups; 80 percent are low maximum drinkers as contrasted to 61 percent of the employed, 58 percent of the unemployed, and 42 percent of students/youths.

Among females, the drinking patterns of students/youths and the unemployed are somewhat similar. This similarity may be in part due to the fact that unemployed females are fairly young and unmarried (94 percent), characteristics that are also common to female students and women who are in search of their first employment.

As was observed among males, the highest consumption of alcohol among females is by students/youths (30 percent) and the unemployed (25 percent) compared to employed respondents (14 percent). Retired females and housewives are quite similar in their patterns of alcohol consumption. This is particularly noted among abstainers and those with low maximum drinking patterns, although housewives are more abundant in the frequent low maximum drinking pattern.

Table 5.—Drinking patterns by employment status and sex

MALES

	Employed (N=956)	Unem-ployed (N=188)	Youths/ students (N=159)	Retired (N=314)
Abstainers	4	2	4	4
Infrequent low maximum drinkers	5	9	4	17
Infrequent high maximum drinkers	0	0	0	0
Less frequent low maximum drinkers	8	5	9	12
Less frequent high maximum drinkers	[a]	2	[a]	0
Frequent low maximum drinkers	48	42	29	51
Frequent high maximum drinkers	20	16	30	6
Frequent heavy drinkers	15	24	24	10

FEMALES

	Employed (N=358)	Unem-ployed (N=79)	Youths/ students (N=158)	Retired (N=150)	House-wife (N=1,087)
Abstainers	9	6	11	29	20
Infrequent low maximum drinkers	9	7	6	24	15
Infrequent high maximum drinkers	0	0	0	0	0
Less frequent low maximum drinkers	19	22	16	19	20
Less frequent high maximum drinkers	1	2	2	0	[a]
Frequent low maximum drinkers	48	38	35	26	41
Frequent high maximum drinkers	10	16	21	2	3
Frequent heavy drinkers	4	9	9	0	1

[a] Less than 0.5 percent.

Drinking Patterns by Educational Status

International studies (Walsh 1982) usually indicate a variation in alcohol consumption patterns with educational levels. The highest proportion of abstainers is usually found among those with low educational backgrounds. Alcohol consumption usually increases with higher education levels. In table 6, the distribution of drinking patterns by educational status is found.

Among males, the proportion of abstainers appears to be slightly influenced by educational status. However, the pattern of infrequent low maximum consumption is more common in those without formal schooling (14 percent) and those who have completed only primary studies (9 percent) than among respondents who have attained higher educational levels (4 percent to 5 percent).

In general, a linear increase in alcohol consumption is not observed with increasing educational level for males. Much similarity in drinking patterns exists among those completing junior high and high school. This is especially true in the categories of frequent high maximum and heavy drinkers, where respondents who completed junior high are found to be 42 percent prevalent and high school graduates 46 percent prevalent. The drinking habits of respondents who have completed university studies are closer to those exhibited by respondents who have only completed primary studies, although they tend to be somewhat higher.

When considering the drinking patterns of females by educational status, an increasing trend often noted in the literature is observed. Females without formal schooling (26 percent) tend to be abstainers three times as often as university students (9 percent). Respondents of low educational status also tend to be more represented among infrequent low maximum drinkers as compared to higher educational levels.

With respect to frequent high consumption of alcohol, an increase with educational status is clearly seen. For example, only 1 percent of those with no formal schooling are classified as such as compared to 10 percent of junior high school respondents and 14 percent of university respondents. Keeping in mind that female frequent heavy drinkers are few, a similar trend is observed with an increase in educational status. Frequent heavy drinking is six times more prevalent among university students than among those without formal schooling and twice as prevalent as among those with other intermediate levels of education.

Table 6.—Drinking patterns by educational status and sex

	No formal schooling	Primary studies	Junior high	High school	University
			MALES		
	(N=280)	(N=482)	(N=244)	(N=377)	(N=255)
Abstainers	5	3	5	4	5
Infrequent low maximum drinkers	14	9	5	4	5
Infrequent high maximum drinkers	0	0	0	0	0
Less frequent low maximum drinkers	7	10	6	5	12
Less frequent high maximum drinkers	[a]	1	1	0	0
Frequent low maximum drinkers	52	49	41	41	44
Frequent high maximum drinkers	10	13	24	27	18
Frequent heavy drinkers	12	15	18	19	16
			FEMALES		
	(N=462)	(N=583)	(N=314)	(N=250)	(N=252)
Abstainers	26	19	13	11	9
Infrequent low maximum drinkers	21	15	6	9	11
Infrequent high maximum drinkers	0	0	0	0	0
Less frequent low maximum drinkers	18	20	20	18	19
Less frequent high maximum drinkers	[a]	1	[a]	1	2
Frequent low maximum drinkers	33	40	48	47	40
Frequent high maximum drinkers	1	3	10	11	14
Frequent heavy drinkers	1	3	3	3	6

[a] Less than 0.5 percent.

Drinking Patterns and Degree of Urbanization

Metropolitan and nonmetropolitan differences in drinking patterns were examined in order to determine if any social-cultural factors related to degree of urbanization were influencing the distribution of drinking practices in the study population.

Table 7(A) presents the distribution of drinking patterns and the degree of urbanization for males. In general, the data suggest that nonmetropolitan respondents tend to be more common among infrequent and frequent low maximum drinkers. Metropolitan drinkers, on the other hand, are found to be more prevalent among the combined categories of heavy drinking, 34 percent as compared with 28 percent. The differences noted, however, are not statistically significant ($\chi^2=9.1$, $df=6$, $p>.05$).

More significant differences are found for female drinking patterns by degree of urbanization (table 7[B]). Nonmetropolitan respondents are more abundant among abstainers (21 percent contrasted with 17 percent among metropolitan women) and among frequent low maximum drinkers (46 percent for nonmetropolitan contrasted with 40 percent for metropolitan). Females living in metropolitan areas tend to be found twice as often among frequent high maximum drinkers as compared with their rural counterparts and three times as often among heavy drinkers (3 percent versus 1 percent, respectively). These differences in drinking patterns with respect to degree of urbanization are significant at the .05 probability level ($\chi^2=13.2$, $df=6$).

Since Madrid is the center of attraction for many migrants from other geographical regions of Spain, it exhibits an interesting aggregate of diverse social and cultural factors. For example, 46 percent of the study population were not born in the region of Madrid. The influence of having lived prior to age 16 in a metropolitan or nonmetropolitan area inside as well as outside the region was also examined (table 8[A]).

Again, male drinking patterns for the two levels of urbanization were not significantly different. Female drinking patterns, on the other hand, were influenced by the degree of urbanization of the city they resided in before age 16 (table 8[B]). Females who grew up in nonmetropolitan areas were found to be 9 percent more prevalent among abstainers. Those who had grown up in metropolitan areas were found to be 8 percent more prevalent among frequent low maximum drinkers. Metropolitan-born females are

Table 7.—Drinking patterns by degree of urbanization, in percent (weighted)

	Metropolitan >50,000 population	Nonmetropolitan <50,000 population
A. MALES	(N=1,459)	(N=179)
Abstainers	4	4
Infrequent low maximum drinkers	7	10
Infrequent high maximum drinkers	0	0
Less frequent low maximum drinkers	9	8
Less frequent high maximum drinkers	a	a
Frequent low maximum drinkers	45	50
Frequent high maximum drinkers	18	13
Frequent heavy drinkers	16	15
B. FEMALES	(N=1,677)	(N=183)
Abstainers	17	21
Infrequent low maximum drinkers	14	9
Infrequent high maximum drinkers	0	0
Less frequent low maximum drinkers	19	20
Less frequent high maximum drinkers	1	0
Frequent low maximum drinkers	40	46
Frequent high maximum drinkers	7	3
Frequent heavy drinkers	3	1

[a] Less than 0.5 percent.

Table 7B, $\chi^2_6 = 13.2, p < .05$.

Table 8.—Drinking patterns by degree of urbanization prior to age 16, in percent (weighted)[a]

	Metropolitan >50,000 population	Nonmetropolitan <50,000 population
A. MALES		
	(N=975)	(N=622)
Abstainers	4	4
Infrequent low maximum drinkers	7	8
Infrequent high maximum drinkers	0	0
Less frequent low maximum drinkers	7	10
Less frequent high maximum drinkers	1	[b]
Frequent low maximum drinkers	45	48
Frequent high maximum drinkers	19	16
Frequent heavy drinkers	17	14
B. FEMALES		
	(N=1,086)	(N=725)
Abstainers	14	23
Infrequent low maximum drinkers	12	16
Infrequent high maximum drinkers	0	0
Less frequent low maximum drinkers	19	20
Less frequent high maximum drinkers	1	1
Frequent low maximum drinkers	43	35
Frequent high maximum drinkers	8	4
Frequent heavy drinkers	3	1

[a] Total N=3,408; 92 cases missing.

[b] Less than 0.5 percent.

Table 8B, $X^2_6 = 41.7, p < .001$.

Table 9.—Prevalence of alcohol-related problems, by sex, in percent (weighted)

Alcohol problem scales	Sex	
	Males (N=1,638)	Females (N=1,862)
1. Salient drink seeking behavior	6	1
2. Impaired control of drinking	4	1
3. Withdrawal symptoms	3	[a]
4. Alcohol dependence scale	8	1
5. Symptomatic drinking behavior	9	2
6. Belligerent drinking behavior	1	[a]
7. Police problems from drinking	[a]	0
8. Accident due to drinking	[a]	[a]
9. Loss of control drinking	5	1
10. Health problems	7	1
11. Job problems	1	[a]

[a] Less than 0.5 percent.

also twice as common among the combined groups of frequent heavy drinkers. These differences are highly significant ($\chi^2 = 41.7$, $df = 6$, $p < .001$).

Alcohol-Related Problems

Although the general pattern of drinking in the region of Madrid is frequent consumption of small quantities of alcohol, it is not a population exempt from alcohol-related problems.

Tables 9 to 12 present preliminary data on the prevalence of alcohol-related problems in the past year for the total population. The percentages reflect the number of respondents who reported having had at least one positive item for the problem scales.

The findings show, overall, a low prevalence of alcohol-related problems (table 9). However, specific rates for males demonstrate that for every problem scale, their reported problem rates are higher than those reported by females. This is especially true of scales identifying possible alcohol dependence. Social problems or consequences, on the other hand, are less prevalent in both sexes, although slightly higher for males.

Special attention should be drawn to the alcohol problem scales for police problems, accidents, and job problems. The low prevalence found for these scales may reflect a general tendency by Spanish society to overlook social problems or consequences related to alcohol consumption. For example, car accidents due to drunk driving are not usually registered as such by law enforcement officials. Up until very recently, drunk drivers were not arrested or penalized on a routine basis.

With respect to the prevalence of job problems, unless very extreme and continuous drunken behavior is exhibited on the job, an employee is very rarely sanctioned. In addition, workers' rights in Spain are protected in that it is much more difficult to fire or demote the Spanish worker compared with workers in other countries. With respect to alcohol-related dismissal, the National Labor Laws (Art. 54) state that it is considered a serious fault (reason for dismissal) if habitual intoxication or drug addiction have *negative repercussions* on the job. Inherent in this law is a certain degree of tolerance of intoxication on the job. In any event, the law is seldom enforced. Consequently, if the social structure is lax in identifying and sanctioning alcohol-related problems, the individual will also identify less often the relationship between alcohol consumption and related social consequences and will also report having experienced such problems less often. Thus, the question must be raised, Is the prevalence of alcohol-related problems low, or are alcohol-related problems not being identified as such?

When alcohol-related problems are viewed across age groups (table 10), a significant age effect is observed. In 8 of the 11 scales examined, more than 60 percent of the individuals reporting problems were found to be between 18 and 29 years of age. Reported health problems are an exception. Only 49 percent of those reporting positive on this scale are in the 18-29 year age group. The age groups between 30-59 years represent 49 percent of those reporting health problems. These findings are not unusual given that some alcohol-related health problems appear only after many years of continued drinking.

Table 11 gives the prevalence of alcohol-related problems within drinking patterns. This table demonstrates a skewed prevalence of alcohol-related

Table 10.—Distribution of current alcohol-related problems across age groups, in percent (weighted)

Alcohol problems scales	N	Age group				
		18-29	30-39	40-49	50-59	60+
1. Salient drink seeking behavior	111	68	15	8	2	6
2. Impaired control of drinking	71	65	20	10	3	3
3. Withdrawal symptoms	50	56	18	20	0	6
4. Alcohol dependence scale	160	63	19	12	2	4
5. Symptomatic drinking behavior	168	67	17	9	2	4
6. Belligerent drinking behavior	25	84	[a]	16	0	0
7. Police problems from drinking	8	88	12	0	0	0
8. Accident due to drinking	9	100	0	0	0	0
9. Loss of control drinking	103	62	20	7	3	8
10. Health problems	128	49	15	20	3	14
11. Job problems	15	57	14	29	0	0

[a] Less than 0.5 percent.

Table 11.—Prevalence of alcohol-related problems by drinking pattern, in percent (weighted)

Alcohol problems scales	Drinking pattern					
	Infrequent low maximum (N=373)	Less frequent low maximum (N=491)	Less frequent high maximum (N=21)	Frequent low maximum (N=1,504)	Frequent high maximum (N=409)	Frequent heavy (N=311)
1. Salient drink seeking behavior	[a]	0	19	1	8	20
2. Impaired control of drinking	[a]	[a]	5	[a]	5	14
3. Withdrawal symptoms	[a]	0	10	[a]	2	12
4. Alcohol dependence scale	[a]	1	24	[a]	11	29
5. Symptomatic drinking behavior	[a]	0	33	1	13	29
6. Belligerent drinking behavior	[a]	0	5	0	2	5
7. Police problems from drinking	[a]	0	0	0	[a]	2
8. Accident due to drinking	[a]	0	0	0	1	1
9. Loss of control drinking	[a]	[a]	10	1	8	19
10. Health problems	2	1	29	1	7	22
11. Job problems	0	[a]	0	0	0	4

[a] Less than 0.5 percent.

problems in the frequent high maximum and frequent heavy drinking patterns. In almost all scales, the frequent heavy drinkers show the highest problem prevalence. These findings support an association between frequent high consumption and alcohol-related problems.

It is noteworthy that 2 percent of infrequent low maximum drinkers reported having alcohol-related health problems; this however, may reflect more a preoccupation with health problems ("I felt that my drinking was becoming a serious threat to my physical health") for these drinkers as compared to full-fledged problems reported by those who drink more ("I had an illness connected with drinking that kept me from working on my regular activities for a week or more" and "A physician suggested I cut down on my drinking").

If the distribution of alcohol-related problems is viewed across drinking patterns (table 12), a similar trend is found. Drinking problems are observed more often among the frequent high maximum and frequent heavy drinking patterns. These two drinking patterns account for more than 80 percent of the problem scale distributions.

Once having described the distribution of alcohol-related problems across drinking patterns and age groups, it can be suggested that the prevalence of alcohol-related problems is highly influenced by the drinking practices of those aged 18-29 years. Keeping in mind that 51 percent of frequent high maximum drinkers and 42 percent of frequent heavy drinkers fall in this age group, it is not surprising to find a corresponding high prevalence of alcohol-related problems.

The interpretation of these associations must be made with caution, as other alcohol researchers (Cahalan 1970; Room 1977; Clark and Midanik 1982) have pointed out. A high prevalence of alcohol problems in this age group may not be as indicative of alcohol dependence as it is of symptomatology related to short-term physical consequences of heavy drinking bouts, which are more common in this group. These problems and symptoms may not necessarily indicate lasting physical changes or future alcohol dependence, although they are indicative of heavy alcohol consumption.

Community Response to Alcohol Consumption

A battery of statements was included that focused on the study population's attitudes toward alcohol use, intoxication, alcoholics, and alcoholism treat-

Table 12.—Distribution of current alcohol-related problems across drinking patterns, in percent (weighted)

Alcohol problems scales	N	Drinking pattern Infrequent low maximum	Less frequent low maximum	Less frequent high maximum	Frequent low maximum	Frequent high maximum	Frequent heavy
1. Salient drink seeking behavior	111	1	0	4	8	31	56
2. Impaired control of drinking	71	1	1	1	7	28	63
3. Withdrawal symptoms	50	2	0	4	4	16	76
4. Alcohol dependence scale	160	1	2	3	9	29	57
5. Symptomatic drinking behavior	168	1	0	4	10	33	53
6. Belligerent drinking behavior	25	4	0	4	0	28	64
7. Police problems from drinking	8	12	0	0	0	12	75
8. Accident due to drinking	9	11	0	0	0	44	44
9. Loss of control drinking	103	1	1	2	9	30	58
10. Health problems	128	5	4	5	13	21	52
11. Job problems	15	0	13	0	0	0	87

ment aspects. These were examined with the hypothesis in mind that population attitudes play an important role in drinking patterns. Given that the drinking pattern that best describes the region of Madrid is frequent consumption of low alcohol quantities, it would be expected that population attitudes towards alcohol use would be permissive and liberal but conservative regarding intoxication.

In table 13 is found the percent distribution of agreement and disagreement with statements regarding alcohol use. Having a drink is considered to be one of the pleasures of life by a third of the total population. The sex-specific distributions indicate that males (41 percent) more often agree with this statement than females (29 percent). Considering the frequency with which drinking occurs in the population, it may be reassuring that the percentage of agreement is not higher. If alcohol consumption is as mundane as sleeping and eating in the population, it may be less often characterized as one of the pleasures of life compared to other less mundane and infrequent behaviors.

When asked about the statement, "Having a drink with someone is a way of being friendly," 50 percent of the total population agreed with this statement. Again, male rates of agreement were higher than female. This higher response rate may reflect the social nature of drinking in Spanish society, where a great deal of socializing occurs in bars and pubs.

A negative view of alcohol use is detected in the questions that suggest that drinking causes people to do things they should not and that drinking often brings out the worst in people. For the former item, 90 percent of the population agreed; 72 percent of the respondents agreed with the latter. In both cases, female agreement rates were found to be higher.

The results of these two questions indicate a highly negative view toward alcohol use that is not consistent with the first two questions examined and that is not consistent with the population's drinking patterns. The term "drinking" (which in and of itself does not have any implicit connotation of amount of alcohol consumed) may be interpreted as "heavy drinking" or "intoxication" by a large part of the respondents. Considering that 43 percent of the population frequently drink moderate quantities of alcohol, the term "drinking" must be interpreted by these respondents as consuming quantities of alcohol that are greater than what they are accustomed to, or in other words, high or heavy consumption. Had these questions been asked along a gradient of number of drinks, perhaps the percentage of disagreement would have been higher.

Table 13.—Attitudes toward alcohol use by sex, in percent (weighted)

Attitudes toward alcohol use	Sex		
	Males (N=1,638)	Females (N=1,862)	Total (N=3,500)
1. Having a drink is one of the pleasures of life.			
Agree	41	29	34
Disagree	59	71	66
2. Having a drink with someone is a way of being friendly.			
Agree	58	42	50
Disagree	42	58	50
3. Drinking is one of the main causes of people doing things they shouldn't.			
Agree	88	91	90
Disagree	12	9	10
4. Drinking alcohol often brings out the worst in people.			
Agree	67	77	72
Disagree	33	23	28

Attitudes Toward Intoxication

When questioned about views toward intoxication (table 14), the results are inconsistent. Forty-one percent of the study population agreed that "people who get drunk can be very amusing," a fairly permissive view of intoxication. On the other hand, 93 percent of the respondents also affirmed that a drunk person is a disgusting sight. Finally, 13 percent of the respondents agreed that "it does some people good to get drunk once in a while," an attitude reflecting a liberal view of intoxication.

Table 14.—Attitudes toward intoxication by sex, in percent (weighted)

Attitudes toward intoxication	Sex		
	Males (N=1,638)	Females (N=1,862)	Total (N=3,500)
1. People who get drunk can be very amusing.			
Agree	46	36	41
Disagree	54	64	59
2. It does some people good to get drunk once in a while.			
Agree	16	10	13
Disagree	84	90	87
3. A drunk person is a disgusting sight.			
Agree	90	95	93
Disagree	10	5	7
4. A man who is always drunk should be punished.			
Agree	22	24	23
Disagree	78	76	77
5. I would feel ashamed if anyone in my family got drunk.			
Agree	53	60	56
Disagree	47	40	44

What these results really mean is a good question. However, an attempt to explain the inconsistencies observed can be based upon what is anecdotally described as the three stages of drunkenness by Spaniards. Drunkenness is said to have a happy stage, a sad stage, and an out-of-control or sick stage. It is also believed that the first two stages do not necessarily need to result in the final stage of drunkenness. Given this description of drunkenness, it is not unusual to find that 41 percent of respondents agreed that people who get drunk can be amusing if they remain within the first stage of drunkenness, and it also becomes more understandable that 13 percent agreed that it does some people good to get drunk. This interpretation is supportive of a more tolerant view towards the first stage of drunkenness. However, the third stage, loss of control or sickness, is not tolerated. At this stage of drunkenness, almost all respondents consider the drunken person a disgusting sight. These anecdotal comments may be a good starting point for further study of the nature of "intoxication" in the context of Spanish society.

Considering the statement, "a man who is always drunk should be punished," a very high level of disagreement is found among the respondents (77 percent). This may reflect the high degree of social tolerance of drinking problems already mentioned and the almost nonexistent history of legally sanctioning drunken behavior.

Alcoholism as a Disease

The nature of alcoholism from the standpoint of public opinion was also examined (table 15). Agreement with the statement, "anyone who drinks can become an alcoholic," indicates general public acceptance of the disease model of alcoholism in that 73 percent of the total population agreed with it. These results are further supported by the responses to the second statement, "alcoholism is an illness," which 95 percent of the total population affirm to be true.

The results of the following statements are more difficult to interpret due to the contradictory nature of the responses. Eighty-two percent of the population believes that "to recover, an alcoholic will have to quit drinking forever." This view is held more often by females as compared to males (86 percent and 77 percent respectively). At the same time, more than half of the respondents agree that "many alcoholics taper off and get their drinking under control again." To add to the confusion, 43 percent of the respondents agree that "most alcoholics drink because they want to." These findings suggest that although 95 percent of the total population believe that alcoholism is a disease, their knowledge regarding what one must do to recover and whether an alcoholic can recover and drink moderately again is not consistent and may reflect different conceptualizations of alcoholism as a disease.

Table 15.—Alcoholism as a disease by sex, in percent (weighted)

Response	Sex		
	Males (N=1,638)	Females (N=1,862)	Total (N=3,500)
1. Anyone who drinks can become an alcoholic.			
Agree	69	77	73
Disagree	31	23	27
2. Alcoholism is an illness.			
Agree	94	96	95
Disagree	6	4	5
3. To recover, an alcoholic will have to quit drinking forever.			
Agree	77	86	82
Disagree	23	14	18
4. Many alcoholics taper off and get their drinking under control again.			
Agree	54	51	52
Disagree	46	49	48
5. Most alcoholics drink because they want to.			
Agree	39	47	43
Disagree	61	53	57

Views of Alcoholics

The fairly high agreement with the statement, "most alcoholics drink because they want to," contradicts the disease model. These results suggest that the alcoholic cannot be held morally blameless. With respect to the statement, "the alcoholic is a morally weak individual," 89 percent of the total population affirmed this view of alcoholics (table 16).

Table 16.—Views of alcoholics, by sex, in percent (weighted)

Views of alcoholics	Sex: Males (N=1,638)	Sex: Females (N=1,862)	Sex: Total (N=3,500)
1. If I had a problem with my drinking, I would be ashamed to tell anyone.			
Agree	41	48	45
Disagree	59	52	55
2. The alcoholic is a morally weak individual.			
Agree	88	90	89
Disagree	12	10	11
3. A recovered alcoholic deserves a lot of respect.			
Agree	97	98	97
Disagree	3	2	3

Other statements regarding views of alcoholics indicate much sympathy for recovered alcoholics. For example, 97 percent of the population agree that a recovered alcoholic deserves a lot of respect. However, when asked to consider the personal situation of having a drinking problem, 45 percent agreed that they would be ashamed to tell anyone. This indicates that a large part of the respondents share the social stigma attached to alcoholism.

Views Regarding Treatment

Few statements focusing on the treatment of alcoholism were included (table 17); however, the results of the statement, "if you don't get help when you have a drinking problem, it's likely to get worse and worse," demonstrate that the population is aware of the need for treating alcohol problems. When asked if they would know where to go for help if they had a drinking problem, 76 percent of the population responded they did. The

Table 17.—Views regarding treatment, by sex, in percent (weighted)

Views regarding treatment	Sex		
	Males (N=1,638)	Females (N=1,862)	Total (N=3,500)
1. If you don't get help when you have a drinking problem, it's likely to get worse and worse.			
Agree	98	98	98
Disagree	2	2	2
2. If I had a problem with my drinking, I would not know where to get help.			
Agree	22	26	24
Disagree	78	74	76
3. A man's drinking is his own business and no concern of the community.			
Agree	31	32	32
Disagree	69	68	68

results of this question might be linked to the results of the statement regarding alcoholism as a disease. Given that resources for alcoholism treatment in the region of Madrid are primarily hospital based, the respondents may simply be indicating that the hospital or the physician is the place to go for alcoholism treatment.

The last statement examined is focused on the role of the community in dealing with the alcohol problems of its members. Only 32 percent of the respondents agreed that alcohol problems are no concern of the community. These results suggest agreement that the community has responsibility in developing or solving the alcohol problems of its members.

Conclusions

The objective of this paper is to describe the general drinking practices of the inhabitants of the Autonomous Region of Madrid. From the preliminary analyses presented, it can be said that frequent consumption of moderate quantities of alcohol best describes the prevailing drinking practices of this population. The survey data also demonstrate that alcohol consumption is more frequent among males than females, and men are more likely to drink heavily than women.

The analysis of drinking patterns by social and demographic variables revealed younger age groups are more frequent and heavier consumers of alcohol than older individuals. It was also noted that female drinking patterns shift from frequent moderate consumption patterns in the early years to abstention in the latter years. Males, on the other hand, shift from frequent, high, and heavy patterns of consumption to more moderate levels of consumption.

With respect to income and educational status, the distribution of drinking patterns was not found to follow the trends observed in other international studies. For example, low income respondents were not as prevalent among light and heavy drinkers as other studies have suggested. With respect to educational status, an increase in alcohol consumption was not seen with increasing educational levels, although the trend for females more closely resembled international trends than did that for males.

When considering the drinking patterns of urban and nonurban residents, no significant differences were observed for males. The drinking patterns of females did show significant differences with degree of urbanization at present and prior to age 16.

In general, the prevalence of alcohol-related problems in the survey population was low; however, several comments can be made about the distribution. The prevalence of alcohol-related problems is clearly related to the drinking practices of the young. Those 18-29 years reported consuming larger amounts of alcohol and also reported more alcohol-related problems. The prevalence of these problems must be viewed with caution, given that they may be transitory in nature, though indicative of heavy alcohol consumption. This age group should be given special attention as a risk group for possible alcohol misuse.

The study also suggests that views toward alcohol use, intoxication, alcoholics, alcoholism as a disease, and attitudes toward treatment are not entirely consistent with what was expected in light of the general drinking practices of the population. Many of these differences may be explicable in subsequent detailed analyses of these data focused on learning more about the nature and character of alcohol use in the region of Madrid.

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A Comparative Analysis of Drinking Patterns and Problems in Mexico

M. Elena Medina-Mora[1]

Introduction

The purpose of this chapter to compare the results from two surveys conducted in rural and urban communities with different characteristics in Mexico. The first study was part of the World Health Organization international project on Community Response to Alcohol-Related Problems[2] (WHO 1981) that was conducted in a sector of the Federal District (capital city). The second project[3] was conducted in collaboration with the Alcohol Research Group. The aim of this study was to compare drinking behavior among people of Mexican descent in the United States and Mexicans in Mexico (Caetano and Medina-Mora, unpublished). Thus communities with a high rate of migration to North America were selected for the study. These communities are located in the State of Michoacan in the central region of the country. The State of Michoacan has the double tradition of having been an Indian empire in pre-Columbian times and an important Spanish cultural center after the Conquest. The inhabitants of this region share traditional values.

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The communities studied in the Federal District are located on the outskirts of the city. The considerable growth of Mexico City has practically linked the rural community to the city. Although some of its inhabitants are still peasants, many others work in the city. The urban area is to a high degree inhabited by people born in the city but whose ancestors of first or second generation migrated from rural areas.

The comparison of these communities (Calderon, unpublished; Medina-Mora et al., in press) will enable us to highlight differences and commonalities in traditional groups and others that have been influenced by Western values.

Study Sites

The urban community studied in the Federal District had more than 15,000 inhabitants at the time of the study. Forty-eight percent of its economically active inhabitants were employed in the industrial sector and 43 percent in the services area; only 3 percent were peasants. In the rural community, 56 percent were peasants, and only 15 percent and 21 percent respectively were employed in the industrial and services areas. The majority of the population living in both areas have low socioeconomic status. In the State of Michoacan, two communities were studied, the city of Morelia and the county of Tarimbaro. Morelia is the capital of the State and has 427,964 inhabitants. Forty-seven percent of the people interviewed were either professionals, owners of commercial establishments, or employers; 33 percent were workers, only 3 percent were peasants, and 4 percent were underemployed. Tarimbaro has 27,878 inhabitants, 50 percent of whom are peasants, 12 percent underemployed, and 21 percent workers.

Methods

Household surveys were conducted in the two sites; although people under 18 were selected for interview, in this report only information from those 18 and over will be presented. In Mexico City, a multistage sample was used.[4]

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[4] For a more detailed description of the sampling methodology in Mexico City, see Calderon et al. (1981); and in Michoacan, see Berumen (1985).

In each community, dwellings were listed and selected at random. In the second stage, one person from each dwelling was selected for interview. Males were oversampled (in the urban community, 70 percent of the people interviewed were males, and in the rural community, 63 percent). The information produced was weighted taking into consideration the probability of selection at each stage of sampling in each area. The response rate in the urban community was 89 percent and in the rural area, 93 percent. A total of 551 interviews were conducted with subjects 18 years of age and over.

In the state of Michoacan a sample of 1,200 dwellings (800 in Morelia and 400 in Tarimbaro) was selected. In the urban area (Morelia), a stratified multistage sample was used. Blocks of houses were stratified according to socioeconomic level based on census information and data obtained from the communities. The sample was proportionately distributed to four strata according to the size of the population. Blocks were sampled with the same probability within each stratum. In the final stage, depending on the number of persons living on each dwelling, one to three persons were selected through a preestablished random sampling procedure that guaranteed an unbiased assignment. The rural area was also sampled using a random multistage procedure. Villages and dwellings were selected, with probability proportionate to size, in the first two stages. The person to be interviewed was selected through the same procedure followed in the urban area. The information produced was weighted, taking into consideration the probability of selection of each stage of sampling in each area. The overall response rate was 92 percent. A total of 1,911 individuals 18 years of age and older were interviewed.

Data in the two sites were collected using standardized questionnaires. Respondents were interviewed at home by trained interviewers. The average length of interview was 1 hour. In Mexico City, the WHO (1981) questionnaire was used, and in Michoacan, the questionnaire developed by the Alcohol Research Group to study drinking patterns among U.S. Hispanics (Caetano, unpublished) was used. Both instruments have common questions that enable the comparison of some variables.

Items on norms, attitudes, and reasons for drinking and abstaining are exactly the same. Frequency of drinking and of drunkenness are comparable. Some variations are found in the definition of patterns of use and in the type of problems included in both questionnaires.

In the study conducted in Mexico City, drinkers were divided into six categories that combined frequency and quantity of drinking. Frequency of drinking was divided into two categories defined as: (1) high frequency, drinking one or more times a week and (2) low frequency, drinking less than once a week.

Quantity of drinking was divided into three categories defined as: (1) high, 200 ml or more absolute alcohol; (2) medium, from 80 to 199 ml; and (3) low, less than 80 ml.

For the male population, the quantity consumed on the occasion of heaviest consumption in the past month was used; for the female population, the quantity ingested on the heaviest drinking occasion in the past year was considered.

The quantity-frequency index used in the study conducted in Michoacan is based on that proposed by Cahalan and Room (1974). The information used to build this index is the respondent's self-report of drinking any alcoholic beverage—including wine, beer, liquor, pulque, and proof alcohol—and the quantity of consumption of each beverage during the 12 months prior to the survey. The respondent's frequency of drinking was coded in 11 categories ranging from "never" to "three or more times a day." Quantity of consumption was elicited by asking for the proportion of drinking occasions on which the respondent drank five or six, three or four, and one or two glasses of each beverage.

By combining the information on frequency of drinking a specific beverage and frequency of drinking specific amounts of that beverage, it is possible to classify respondents according to whether they drink five or more drinks of any beverage at least once a week, at least once a year, or never drink five or more drinks.

Cross-tabulating these categories with the frequency of drinking any alcoholic beverage provided a quantity-frequency index suitable for the analysis of the data. This index is composed of seven categories, defined as follows:

Frequent heavy	Drinks five or more drinks at a sitting once a week or more often[5]

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[5] A drink is taken to mean 1 oz of spirits, a 4-oz glass of table wine, or a 12-oz can of beer, each of which contains approximately 9 g of absolute alcohol.

Frequent high maximum	Drinks once a week or more often and has five or more drinks at a sitting occasionally (at least once a year)
Frequent low maximum	Drinks once a week or more often but never has five or more drinks at a sitting
Less frequent high maximum	Drinks one to three times a month and has five or more drinks occasionally (at least once a year)
Less frequent low maximum	Drinks one to three times a month but never has five or more drinks at a sitting
Infrequent	Drinks less than once a month but at least once a year; may or may not drink five drinks at a sitting
Abstainer	Drinks less than once a year or has never drunk alcoholic beverages

Results

The proportion of drinkers and abstainers observed in the two studies are shown in table 1. As can be seen, in both studies, more males than females reported drinking in the previous year. The rate of abstention was higher in the more traditional communities of the State of Michoacan. Rural-urban status made no difference in female drinking habits; very few females in both areas reported consuming alcohol in the previous 12 months. Among the male population, the rate of abstention was significantly higher in the rural population. In Mexico City the same proportion of male drinkers was observed in the rural and urban communities, and a slightly higher rate of drinking was observed among urban females compared to women living in the rural area. (See table 2.) In both sites, those under 50 years of age drank more than the older population.

Although more daily drinking was reported in the rural communities, the rate was low. (See table 3.) In Mexico, frequent drinking is not a common practice. Drunkenness is frequent in male populations, especially in Mexico City. Only 25 percent of the males reported not having been intoxicated in the past 12 months. The rate observed among females (28 percent) is also quite high considering the small proportion that reported any drinking. (See table 1.)

As can be seen in table 4, although low frequency of drinking is more common, a high percentage of male respondents (10 percent) in Mexico City

Table 1.—Proportion of drinkers and abstainers

	Mexico City			Michoacan		
	N	Drinkers	Abstainers	N	Drinkers	Abstainers
Males	(355)	85	15	(484)	74	26
Urban	(214)	86	14	(295)	74	26
Rural	(141)	83	17	(186)	67	33
Females	(196)	47	53	(686)	34	66
Urban	(101)	55	45	(453)	34	66
Rural	(95)	39	61	(233)	33	67
Total	(551)	66	34	(1,167)	56	44

Table 2.—Proportion of drinkers by age and sex

	Mexico City			Michoacan	
	N	Urban	Rural	N	Drinkers
Men					
18-29	(144)	89	76	(183)	77
30-49	(144)	92	89	(163)	82
50+	(67)	69	86	(132)	56
Women					
18-29	(86)	59	32	(269)	42
30-49	(81)	53	44	(230)	35
50+	(29)	53	43	(156)	22

reported both a high frequency of drinking (at least once a week) and a large quantity consumed (200 ml and over). Among frequent drinkers, high quantities were more common. Interestingly enough, among the low frequency group, high quantities were also commonly observed.

In Michoacan, the same observation was true. The ingestion of high quantities per drinking occasion seems to be common among Mexican males. This relation is better observed in the typology used in Michoacan. The percentages observed in the high maximum categories (more than five drinks per drinking occasion) are higher than low quantity categories.

In both sites, females very seldom drink, and when this happens, small amounts are consumed.

In table 5 are shown drinking patterns by gender, age, and rural-urban status for the study conducted in Michoacan. As indicated, among males in the rural community, higher rates of both abstention and heavy drinking are observed. Heavy drinking is significantly more frequent in the rural population compared with the urban group. Age plays an important role. Among males younger than 40 years of age, abstention rates are very similar in both urban and rural settings. Among females, urban and rural status

Table 3.—Frequency of drinking and frequency of drunkenness

	Mexico City				Michoacan			
	Males		Females		Males		Females	
Frequency of drinking	Urban (214)	Rural (141)	Urban (101)	Rural (95)	Urban (294)	Rural (184)	Urban (450)	Rural (232)
At least once a day	1	9	—	3	3	9	1	3
1 to 6 times a week	20	21	1	3	12	16	3	4
1 to 3 times a month or less than once a month	65	54	54	33	58	42	30	24
Abstainers	14	17	45	61	26	33	66	67

	Mexico City		Michoacan	
Frequency of drunkenness	Males	Females	Males	Females
In the last year	75	28	84	5

Table 4.—Drinking patterns, in percent

Mexico City	Males (N=340)	Females (N=195)
High frequency		
High quantity	10	0
Medium quantity	6	1
Low quantity	3	3
Low frequency		
High quantity	12	1
Medium quantity	14	3
Low quantity	12	7
Current drinker, but no occasion reported in the past month	27	33
Abstainers	16	53

Michoacan	Males (N=478)	Females (N=682)
Frequent heavy drinker	6	1
Frequent drinker		
High maximum	7	[a]
Low maximum	3	3
Less frequent drinker		
High maximum	24	2
Low maximum	5	8
Infrequent drinker	29	20
Abstainers	26	66

[a] ≤ 0.5 percent.

Table 5.—Urban and rural drinking patterns by gender and age in Michoacan, in percent[a]

Males

	Urban		Rural	
	Under 40 years (N=183)	40 and over (N=111)	Under 40 years (N=105)	40 and over (N=79)
Abstainers	22	34	24	44
Infrequent	29	31	18	17
Less frequent low maximum	3	7	1	1
Less frequent high maximum	27	17	30	15
Frequent low maximum	3	3	2	1
Frequent high maximum	7	5	10	13
Frequent heavy	8	3	15	9

Females

	Urban		Rural	
	Under 40 years (N=300)	40 and over (N=150)	Under 40 years (N=160)	40 and over (N=72)
Abstainers	61	75	65	72
Infrequent	21	17	20	19
Less frequent low maximum	10	5	3	0
Less frequent high maximum	3	1	3	2
Frequent low maximum	4	1	5	5
Frequent high maximum	0	1	2	2
Frequent heavy	1	0	1	0

[a] Ns are unweighted and percentages are weighted.

does not affect drinking habits, but age does. Abstention is less frequent among young females.[6]

Amounts and types of problems are shown in tables 6 and 7. Unfortunately, the problems investigated in the two studies were different, and thus a direct comparison is not possible. Nevertheless, it is obvious that a high proportion of the populations studied reported having experienced one or more problems in the past 12 months, in spite of the fact that a high proportion of respondents were abstainers and that among drinkers, frequent drinking was not common. This is especially remarkable for the female population. The number of personal problems reported by the population studied in Mexico City is notable. Rural males reported more problems than urban males.

Withdrawal symptoms[7] and health problems were very common in the State of Michoacan. Binge drinking was also common. The results suggest that either problems are more related to amount drunk and becoming intoxicated, or possibly other social variables play important roles in problem manifestation.

Table 8 shows the relation between drinking patterns and problems in Michoacan. It is obvious that problems are partially associated with high quantities; only 28 percent of males and 21 percent of females with problems are either frequent heavy drinkers or frequent high maximum drinkers, but 89 percent of males and 46 percent of females with problems consume large amounts.

In the Alcohol Research Group questionnaire, both drinkers and abstainers were asked their reasons for abstaining or for not drinking more. Drinkers were asked to give reasons for moderation, while abstainers were asked why they abstain. The answers of both groups are presented in tables 9 and 10.

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[6] The reason for the apparent inconsistency btween tables 4 and 5 in the rates of frequent heavy drinkers is that table 4 reports percentages for the weighted data for rural and urban populations together, whereas table 5 reports independent data for each of the two populations.

[7] Withdrawal symptoms included the following: drinking first thing in the morning, drinking in the morning to recover from drinking the previous day, sweating, and hands shaking.

Table 6.—Types and amounts of problems in the past 12 months in Mexico City, by gender, in percent

	Males		Females	
	Urban (N=214)	Rural (N=141)	Urban (N=101)	Rural (N=95)
Specific problem				
Felt that you should cut down or stop drinking	39	57	17	16
Blackouts	28	45	8	7
Drunk when there was an important reason to stay sober	27	43	5	4
Hands shaking	23	42	6	8
Warned by a doctor	12	23	5	4
Drink first thing in the morning	11	15	2	1
Binge drinking	10	13	1	—
Number of personal problems				
None	32	6	35	20
1	14	16	13	8
2	14	13	2	4
3	9	19	1	4
4	8	13	3	—
5	4	8	1	1
6 and over	4	8	1	1

Table 7.—Types and amounts of problems in the past 12 months in Michoacan, by gender, in percent

Specific problem	Males		Females	
	Rural (N=186)	Urban (N=295)	Rural (N=233)	Urban (N=453)
Salience of drinking behavior	15	16	2	1
Need to drink	4	4	2	[a]
Increased tolerance	7	6	0	[a]
Impaired control	15	9	1	1
Withdrawal symptoms	23	15	5	1
Binge	5	6	0	0
Health problems	24	19	3	3
Belligerence	10	9	0	1
Police problems	4	5	0	1
Financial problems	18	14	2	[a]
Job problems	18	11	1	[a]

Number of problems by gender

No. of personal problems	Males (N=479)	Females (N=680)
None	66	95
1	9	2
2	4	1
3	5	1
4 and over	16	1

[a] ≤ 0.5.

Table 8.—Relation between drinking patterns and problems in Michoacan, in percent[a]

	Males		Females	
	No problems	Problems	No problems	Problems
Infrequent drinker				
Low maximum	20	7	16	36
High maximum	11	19	2	6
Less frequent drinker				
Low maximum	7	1	8	10
High maximum	14	42	2	19
Frequent drinker				
Low maximum	3	3	2	7
High maximum	4	12	[b]	8
Frequent heavy drinker	1	16	0	13

[a] Percentages are based on total males or females with or without problems.
[b] Less than 0.5 percent.

All the reasons in table 9 were endorsed by the majority of respondents from the two studies with the exception of "It goes against your religion." That was supported by only around half of the respondents.

Reasons for drinking were asked only of those persons who drink at least once a year (table 10). In general, the reasons for drinking included in the questionnaire were supported by only half or less than half of the drinkers. Females and respondents in Michoacan were even less willing than those interviewed in Mexico City to indicate that the reasons stated were somewhat or very important. The highest support was given to "Drinking is a good way to celebrate," "I like the feeling of getting high or drunk," and "It is what most of my friends do when we get together."

Only three items that questioned attitudes about drinking and drunkenness were the same in both studies: "Having a drink is one of the pleasures of life," "Having a drink with someone is a way of being friendly," and "It does some people good to get drunk once in a while." (See table 11.)

Table 9.—Reasons for abstaining from drinking, in percent

	Mexico City		Michoacan	
Statement	Males (N=355)	Females (N=196)	Males (N=483)	Females (N=698)
1. Drinking is bad for your health.	95	97	93	95
2. It costs too much when you need money for other things.	92	93	90	94
3. Your family or friends get upset when you drink.	72	76	73	81
4. It may interfere with your job or work.	93	91	83	89
5. It goes against your religion.	48	58	47	56
6. You are afraid of becoming an alcoholic.	76	91	65	65
7. Drinking often makes you do things you are sorry for later on.	76	80	92	94
8. Drinking can make you feel sick.	80	90	93	94
9. Drinking can get you into trouble with the police or authorities.	79	85	84	90
10. Drinking leads to losing control over your life.	85	89	91	93

Table 10.—Reasons for drinking: Percentages of current drinkers indicating the reason for drinking was "somewhat important" or "very important"

Statement	Mexico City		Michoacan	
	Males (N=302)	Females (N=93)	Males (N=353)	Females (N=246)
1. Drinking is a good way to celebrate.	50	38	31	29
2. I drink because there is not anything else to do	18	8	13	7
3. It is part of a good diet.	21	9	14	20
4. I like the feeling of getting high or drunk.	43	27	33	21
5. It is what most of my friends do when we get together.	55	44	37	27
6. Drinking helps me to forget about my worries and my problems.	21	18	18	10
7. Drinking gives me more confidence and makes me sure of myself.	15	18	18	9
8. I drink when I feel tense and nervous.	21	17	16	21

More people in Michoacan considered having a drink one of the pleasures of life. The other two items were more preferred by respondents in Mexico City. A more favorable attitude toward drunkenness was observed in the capital city.

The question that explores drinking norms was stated as, "In your opinion, what is the most that each of the following people should drink at one time?" The options included "no drinking," "one or two drinks," "enough to feel the effects but not drunk," and "getting drunk is sometimes all right," for males and females of different age groups. (See table 12.) In both sites, with the exception of boys around 16 years old, males may drink more than females, and this attitude is taken by both genders. In Mexico City, females

Table 11.—Attitudes about drinking and drunkenness

Statement	Mexico City		Michoacan	
	Males (N=355)	Females (N=196)	Males (N=483)	Females (N=698)
Having a drink is one of the pleasures of life.	27	19	52	52
Having a drink with someone is a way of being friendly.	63	53	31	31
It does some people good to get drunk once in a while.	50	36	26	24

were more restrictive toward males than males were. They were also more restrictive regarding themselves than were males. This was not true for the population from Michoacan, where responses given by both males and females were very similar. Overall, both drinking and heavy drinking were more acceptable in Mexico City.

Discussion

In Mexico, in spite of the fact that high rates of abstention are observed, alcohol-related problems are common. Death by hepatic cirrhosis is among the top 10 causes of death in the total population and is the primary cause of death among males from 24 to 40 years of age. Rates of alcohol-related crime and accidents are high. The abuse of alcohol also represents a heavy burden on the family (Medina-Mora et al., in press).

In both communities high rates of abstention and of alcohol-related problems were simultaneously observed.

Results from these surveys provide some insight into this puzzle. Both studies found the typical drinking pattern of the populations in Mexico is one of low frequency, but with large quantities consumed per drinking occasion. A high frequency of drunkenness occurs, and thus a high rate of asso-

Table 12.—Drinking norms for gender and age groups, in Mexico City and Michoacan, in percent

		Mexico City		Michoacan	
		Males (N=355)	Females (N=196)	Males (N=480)	Females (N=695)
		ANY DRINKING PERMITTED			
Question asked about:					
Boy	16	40	23	20	16
Man	21	76	46	54	57
	30	—	—	68	73
	40	86	55	64	63
	60	63	39	30	31
Girl	16	33	21	12	11
Woman	21	69	42	32	37
	30	—	—	44	52
	40	85	60	33	42
	60	65	41	15	19
		HEAVY DRINKING PERMITTED			
Question asked about:					
Boy	16	5	4	4	2
Man	21	63	30	15	9
	30	—	—	30	28
	40	69	56	27	26
	60	56	34	8	10
Girl	16	1	1	[a]	[a]
Woman	21	40	30	3	2
	30	—	—	7	8
	40	61	44	6	7
	60	36	18	2	3

[a] ≤0.5.

ciated problems is also observed. Rates of drinking among males are high, while females very seldom drink. Thus, it seems that the alcohol available is consumed by a small sector of the population that does not drink very often but drinks large quantities on drinking occasions. Problems are likely to result from this pattern of use. Personal problems seem to result from the large quantities consumed rather than as a result of alcohol dependence. Thus, there is a need to reconsider the traditional definition.

Within the two types of communities, interesting differences were observed. Rates of abstention were higher in the more traditional communities of the State of Michoacan. In Mexico City, the proportions of drunkenness and related problems were considerably higher. Fewer females in the State of Michoacan reported alcohol use, and their problem rate was much lower. Living in urban and rural areas made little difference, but higher drinking rates were observed among the younger group, perhaps indicating some changes in this respect. In Mexico City more urban females reported drinking than did rural females.

In general the respondents in Mexico City were more supportive of both drinking and heavy drinking, had more liberal attitudes, and gave more reasons for drinking.

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A Comparative Analysis of Drinking Among Hispanics in the United States, Spaniards in Madrid, and Mexicans in Michoacan[1]

Raul Caetano[2]

Introduction

Until very recently there had been no studies analyzing survey data on alcohol use across Spanish-speaking cultures. The first study of this kind is that by Caetano and Medina-Mora (unpublished) comparing drinking by Mexican Americans in the United States and Mexicans in Mexico. The comparisons reported in this paper are therefore the second such study. It compares survey data in three different Spanish-speaking cultural groups:

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Spaniards from Madrid, Mexicans from Michoacan, and Hispanic residents of the United States.

While there have been no previous surveys of alcohol consumption in the region of Madrid, there is general information for the country as a whole, and this may be used for a broad characterization of drinking in this setting. In 1984 Spain ranked sixth in alcohol consumption worldwide, with a per-capita consumption of 11.2 liters of absolute alcohol (Produktschap voor Gedistilleerde Dranken 1985). It has been thought of as a wine producing area and a wine drinking culture. In 1984 Spain ranked fourth in wine production in the world, behind Italy, France, and the U.S.S.R. (Produktschap voor Gedistilleerde Dranken 1985). About 55 percent of the alcohol consumed in Spain in 1980 was consumed in the form of wine, 23 percent as distilled spirits, and 22 percent as beer (Salamanca 1984). Beer production and consumption have increased dramatically in recent years. Between 1958 and 1977, beer production increased by 490 percent, from 2.89 to 17.1 million hectoliters. Beer consumption rose from 15 liters per capita in 1962 to 53.4 liters per capita in 1980. By comparison, between 1962 and 1980, wine production increased by 57 percent, going from 27 to 42.4 million hectoliters, and wine consumption rose from 19.4 to 22.2 million hectoliters, an increase of 14 percent. The mortality rate for liver cirrhosis has also increased markedly since 1950. The national liver cirrhosis mortality rate was 10 per 100,000 people in 1950; by 1979 it had risen to 22.35 per 100,000 people.

A recent national survey of drinking practices of the adult population provided information characterizing drinking in Spain (Salamanca 1984). About a quarter (24 percent) of the population did not drink alcohol or drank very rarely in the 12 months prior to the survey. Abstention during the week preceding the interview was reported by 20 percent of the men and 49 percent of the women surveyed. Drinking was correlated with income and education and inversely related to age. Approximately 28 percent of the men and 2 percent of the women consumed more than 350 cc of absolute alcohol per week (about 35 drinks). Wine and beer drinking was mostly done with family members, while distilled spirits were usually drunk with friends. The preferred occasion for drinking was at meal time. The two most frequently stated reasons for drinking were "because it is customary" and as a "diet complement."

There have been a number of studies of alcohol production and surveys of drinking patterns in Mexico. This literature has been recently reviewed (Calderon et al. 1981; Rootman and Moser 1984; Rosovsky 1985). In 1984 per-capita consumption for those 15 years of age and older was 5.4 liters of absolute alcohol, 3 liters for the total population (Rosovsky 1985). Also in 1984, per-capita consumption of beer, wine, and pulque among those 15 years of age and over was 3.1, 0.08, and 0.3 liters of absolute alcohol respectively. The combined per-capita consumption of brandy, tequila, and rum in the same population was 1.6 liters of absolute alcohol. According to consumption statistics compiled by Produktschap voor Gedistilleerde Dranken (1985), Mexico ranks 31st in beer consumption and 46th in wine consumption in the world. However, according to the same source, in 1984 Mexico was the eighth largest producer of beer in the world (25,082 million hectoliters). The production of alcoholic beverages has risen steadily since the 1960s, with the exception of pulque. Between 1972 and 1983, the volume of pulque sales decreased from 312 to 234 million liters. Aggressive marketing by beer and spirits producers has caused a shift in public taste, resulting in a decrease in the pulque consumption community (Rosovsky 1985).

Surveys of alcohol consumption suggest that the general pattern of drinking in Mexico is one of infrequent drinking of relatively large amounts. According to studies conducted in six different cities in Mexico, the abstention rate (no drinking in the past 12 months) varied between 25 percent and 30 percent among men and between 49 percent and 76 percent among women (Terroba et al., unpublished; Medina-Mora et al. 1980; De la Parra et al. 1980; Calderon et al. 1981; Natera and Terroba 1982). Heavy drinking, defined as consumption of five drinks or more per occasion at least once a month, varied between 12 percent and 36 percent among men, and between 0 percent and 6 percent among women. Few surveys have been conducted among the rural population. However, ethnographic studies suggest that alcohol places a heavy burden on rural communities (Maccoby 1972; Natera 1985; Natera and Orozco 1981). Comparison of survey data on drinking in two communities in the United States and Mexico (Caetano et al., unpublished) showed that drinking was more frequent in the U.S. sample, while drunkenness was more frequent among Mexican respondents. In spite of their relatively infrequent drinking, Mexicans report a comparatively high rate of problems. This was evident in the comparison of drinking in communities in Mexico, Scotland, and Zambia undertaken by Roizen (1981), in Caetano et al.'s (unpublished) comparison of drinking in two communities in the United States and Mexico and in a study of drinking in Michoacan and among U.S. Hispanics (Caetano and Medina-Mora, unpublished). Mexicans also seemed to have a strong negative attitude toward drinking, showing considerable support for questionnaire items that ascribed bad things to alcohol or, independent of drinking status, supporting a wide number of reasons for abstaining (Roizen 1981; Caetano et al., unpublished; Caetano and Medina-Mora, unpublished).

The literature on alcohol use by U.S. Hispanics has also been reviewed (Alcocer 1982; Caetano 1983, 1986; Gilbert 1985; Gilbert and Cervantes 1986). This brief description will cover the main findings from the 1984 national survey. These data will then be compared with data from Michoacan and Madrid. A more detailed discussion of these findings can be found in Caetano (1987*a,b,c,d,* in press) and Caetano and Medina-Mora (unpublished). Abstention rates (no drinking in the past 12 months) were 22 percent among men and 47 percent among women. Among men, the rate of drinking at least once a week and also drinking five or more drinks at a sitting at least once a week (frequent heavy drinking) was highest in the 30-39 age group (26 percent). Drinking five drinks in a day at least once a week was higher in the 30-39 age group (28 percent and 26 percent, respectively). Widowed men, those with less education, those who were born abroad, and those who were older drank less than other men. Among women there was a relatively large percentage of frequent high maximum drinkers among those who were 50-59 years of age (20 percent), those with income between $10,001 and $15,000 (23 percent) and those with income equal to or above $30,000 (20 percent), those with some college education (12 percent), and those who were born in the United States of parents also born in the United States (26 percent). Drinking among women was also positively associated with being single, having a higher income, more education, being employed, and being born in the United States. Alcohol problems were more frequent among men, among the young, among those born in the United States, but with at least one parent born abroad, and among Mexican Americans. Abstention rates, drinking patterns, and attitudes and norms toward drinking change with acculturation to U.S. society.[3] Among the highly acculturated, abstention rates were lower, heavier drinking was more frequent, and attitudes and norms were more liberal than among those low in acculturation. This effect was independent of sex, age, education, income, and employment status. The rate of problems, however, was not affected by acculturation level.

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[3] The acculturation scale resulted from a factor analysis of respondents' answers to questions on daily use and ability to speak, read, and write English and Spanish; preference for media (books, radio, TV, music) in English or in Spanish; ethnicity of people they interact with within their church, at parties, and in their neighborhood now and when growing up, as well as questions about values thought to be characteristic of the Hispanic way of life.

These three settings differ among themselves by much more than these alcohol-related indicators. Economic conditions or the general stage of socioeconomic development, for instance, are a major difference, suggesting that minimum wage, years of education, and other socioeconomic indicators are quite different in these three settings even when they may have the same numerical or categorical representation. The modern history of these three populational groups is also different. While Mexicans and Spaniards have a strong national identity based partly on the history of their respective countries, U.S. Hispanics are still forging a new image for themselves from their experiences as immigrants in the United States. At the same time, residents of Madrid and Michoacan and U.S. Hispanics are connected by language, history, and culture in a very complex way, one that is yet to be fully described and understood. The interplay between shared Latin cultural characteristics and the differences across the three sites is a powerful attraction for the kind of comparison undertaken in this study and provides the foundation on which this paper is based. The key word here as in all research is "comparison," and because it occurs across different cultures it creates the possibility of looking at cultural difference as an explanatory variable.

The approach has some methodological problems, and these should be kept in mind from the outset. The dimensions of difference and commonality in culture are by no means well defined, and some of the variations observed from one study site to another may well be determined by, say, the type of economy (cash versus crop) and the way in which alcohol is produced. It behooves the researcher, of course, to consider these alternative explanations. Other problems are the uncertainty researchers have about how apparently identical questions are understood by respondents in different countries, even when they share common cultural characteristics, and the inability to standardize independent variables and adequately manipulate research conditions. The comparison developed in this paper has an additional limitation: The samples being analyzed are representative of administrative and political units of varying size in each country. The sample from Spain is representative of the population living in the Autonomous Region of Madrid; the sample from Mexico covers the city of Morelia, capital of the State of Michoacan, and an adjoining rural county; and the sample of U.S. Hispanics is a national sample, representative of the Hispanic population living in the United States. More information on sampling methods and data collection in each site is given below.

Methods

Sampling and Data Collection Methodology in the United States

The methodology in the United States is described in detail elsewhere (Santos, in press; Caetano, in press). Briefly, the respondents in the study were a multistage probability sample of Hispanic households in the 48 coterminous United States. A total of 1,453 respondents were interviewed and the response rate for the sample was 72 percent. Data were collected by trained interviewers in face-to-face interviews averaging an hour in duration, usually in the respondent's home. The instrument for data collection was a standardized questionnaire. Respondents were given the choice of being interviewed in English or Spanish—a Spanish version of the questionnaire and bilingual interviewers were assigned when needed. About 43 percent of the respondents in the Hispanic sample chose to be interviewed in Spanish.

Ethnic Identification in the United States

The main ethnic identifier for sample selection and in the analysis was "ethnicity of the family of origin." The respondent was asked: "Which of these groups describes your family origin?" Seven categories were provided, two of which were "black of Hispanic origin (Latino, Mexican, Central or South American, or any other Hispanic origin)" and "white of Hispanic origin (Latino, Mexican, Central or South American, or any other Hispanic origin)." After selecting one of these two categories, the respondent was then asked to identify a national group. The question asked was: "Which of these groups best describes your own ethnic identification: Puerto Rican, Cuban, Cuban American, Mexican, Mexican American, Latin American (specify country), other Spanish Hispanic (specify country), Anglo American, some other group (specify)." About 95 percent of those who self-identified as Hispanics by the first question were also so identified by the second.

Sampling and Data Collection Methodology in Michoacan

The State of Michoacan is located in the central part of the Mexican Republic. The survey was conducted in two communities, the city of

Morelia and the county of Tarimbaro. A detailed description of these communities and of the survey methodology can be found in Caetano and Medina-Mora (unpublished). In brief, these communities were selected with the purpose of maximizing comparability of the sample with the Hispanic population of Mexican origin living in the United States. According to the National Survey on Migration to the Northern Border and to the United States, 34.5 percent of the workers who migrate to the United States come either from the central region of the Mexican Republic formed by the States of Guanajuato, Jalisco, and Michoacan, from the States of Guerrero and Mexico, or from Ensenada or elsewhere in Baja California. Among these States, the greatest number of undocumented workers deported from the United States come from the State of Michoacan.

A sample of 1,200 dwellings (800 in Morelia and 400 in Tarimbaro) was selected to conduct the study. The study sampled 1,541 persons 14 years of age or older, but the data analyzed in this report are for 1,191 individuals 18 years of age and older, who comprised 86 percent of the original sample. In the urban area, a stratified multistage sampling procedure was used. Blocks of houses were stratified in four strata according to socioeconomic level based on census information and data obtained from the communities. The sample was proportionately distributed to each stratum according to the size of the population in 1980. The rural area was also sampled using a random multistage procedure. The overall response rate was 92 percent. Data were collected with a standardized questionnaire similar in all respects to that used in the United States. Respondents were interviewed at home by trained interviewers. The average length of interview was 1 hour.

Sampling and Data Collection Methodology in Madrid

The area covered by the sample is the Autonomous Region of Madrid, which includes the city of Madrid and a number of neighboring communities in semirural and rural areas. Sampling was done through a multistage stratified random procedure, with stratification done according to the size of the population in each community. Five strata were formed: the city of Madrid, communities with more than 50,000 inhabitants, communities with a population of between 10,001 and 50,000 inhabitants, communities between with a population of between 2,000 and 10,000 inhabitants, and communities with less than 2,000 inhabitants. Each of the selected communities was further stratified according to health areas as defined by the Autonomous Government of the Region of Madrid, so that health statistics could be obtained in disaggregated form for each area. Households were selected by a random route method, and within each household individuals were selected according to previously established probabilistic procedures. A total of 3,500 individuals 18 years of age and older were interviewed, 1,750 in the city of Madrid and the rest in the surrounding area. Interviews were conducted in the respondent's home by trained interviewers. The average length of the interview was 1 hour, and the drinking questions were the same as those used in the surveys in the United States and Mexico.

Quantity-Frequency Index

The quantity-frequency index used in this report is based on that proposed by Cahalan et al. (1974). The information used to build this index is the respondent's self-report of frequency of drinking any alcoholic beverage—including wine, beer, and liquor—and the quantity of consumption of wine, beer, and liquor during the 12 months prior to the survey. The respondent's frequency of drinking was coded in 11 categories ranging from "never" to "three or more times a day." Quantity of consumption was elicited by asking for the proportion of drinking occasions on which the respondent drank five or six, three or four, and one or two glasses of each of wine, beer, and liquor. By combining the information on frequency of drinking a specific beverage and frequency of drinking specific amounts of that beverage, it is possible to classify respondents according to whether they drink five or more drinks of any beverage at least once a week, at least once a year, or never drink five or more drinks. (See Room, unpublished, for a detailed description.) Cross-tabulating these categories with the frequency of drinking any alcoholic beverage provided a quantity-frequency index suitable for the analysis of the data. This index is composed of seven categories, defined as follows:

Frequent heavy drinker	Drinks once a week or more often; and has five or more drinks at a sitting, also once a week or more often[4]
Frequent high maximum	Drinks once a week or more often and has five or more drinks at a sitting less than once a week but at least once a year

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[4] A drink is taken to mean 1 oz of spirits, a 4-oz glass of table wine, or a 12-oz can of beer, each of which contains approximately 9 g of absolute alcohol.

Frequent low maximum	Drinks once a week or more often but never has five or more drinks at a sitting
Less frequent high maximum	Drinks one to three times a month and has five or more drinks occasionally (at least once a year)
Less frequent low maximum	Drinks one to three times a month but never has five or more drinks at a sitting
Infrequent	Drinks less than once a month but at least once a year, may or may not drink five drinks at a sitting
Abstainer	Drinks less than once a year or has never drunk alcoholic beverages

Assignment to the frequent heavy drinking category in this report is different from that in previous analyses of the U.S. Hispanic sample. This report follows the procedure developed for the comparison between U.S. Hispanics and Mexicans (see Caetano and Medina-Mora, unpublished), and the quantity-frequency index does not sum across different types of beverages to verify whether a subject drank five or more drinks at a sitting.

Results

Frequency of Drinking by Sex

Respondents in each site were asked for the frequency with which they drank specific beverages (e.g., wine, beer, liquor), and for their overall frequency of drinking alcoholic beverages. Answers were coded in 11 categories, ranging from "three or more times a day" to "I have never had any kind of beverage containing alcohol." Table 1 shows these data in a condensed format. There are striking differences in the overall frequency of drinking across sites. Men drinking nearly every day are 15 times more frequent in Madrid than in Michoacan and 5 times more frequent than among U.S. Hispanics. U.S. Hispanic men are concentrated in the one to four times a week and one to three times a month categories, while men in Michoacan have higher frequencies of drinking less than once a month or one to three times a month. Women in Madrid have a much higher frequency of nearly daily drinking than women in the other two samples. Differences between Madrid and Michoacan are particularly striking, for they are also large for the frequencies one to four times a week and one to three times a month.

Table 1.—Frequency of drinking by sex, in percent[a]

Frequency		Men			Women		
		U.S. Hispanic	Michoacan	Madrid	U.S. Hispanic	Michoacan	Madrid
	N	(604)	(478)	(1,638)	(845)	(698)	(1,862)
Nearly every day		12	4	60	1	1	25
1 to 4 times a week		34	12	19	12	3	25
1 to 3 times a month		22	28	9	15	11	20
Less than once a month		10	29	8	24	20	13
Never and not in the past year		22	26	4	47	66	17

[a] Ns are unweighted and percentages are weighted.

Drinking Patterns by Sex

Differences in drinking patterns for men and women across the three sites are also dramatic (table 2). Among men, the rate of abstention is similar for U.S. Hispanics and in Michoacan, but five times the rate of abstainers in Madrid. The distribution of drinkers in the different categories of the quantity-frequency classification is also quite different in each sample. Compared to Michoacan and Madrid, U.S. Hispanic men are much more uniformily distributed across the various categories, the largest difference being between the rates of 7 percent for less frequent high maximum and 22 percent for frequent high maximum drinking. In Michoacan male drinkers are grouped in the infrequent and less frequent high maximum categories, while in Madrid the grouping occurs in the frequent low maximum group. Michoacan has fewer drinkers in the heavier categories of drinking than the U.S. Hispanic sample and the sample from Madrid.

Among women, the differences occur between U.S. Hispanics and Michoacan on the one hand and Madrid on the other. U.S. Hispanics have an abstention rate that is about one-third lower than that for Michoacan and a higher rate of frequent high maximum drinkers. Women in Madrid have an abstention rate that is about one-third that for U.S. Hispanics and one-fourth that for women in Michoacan. The largest difference, however, is in the rate of frequent low maximum drinkers. The rate for women in Madrid is 14 times higher than that for U.S. Hispanics or the Michoacan sample.

Drinking Patterns by Age and Sex

Abstention goes up with age among Hispanics and men in Michoacan, while rates of abstention for men in Madrid remain practically the same (table 3). U.S. Hispanics are more evenly distributed across drinking categories in the 18-29, 30-39, and 40-49 age groups. After that, patterns change, with men in the 50-59 age group having a high rate of less frequent low maximum drinking and men in the 60-plus age group being more evenly distributed across the categories of infrequent, less frequent low maximum, and frequent low maximum drinking. Because there are relatively few men in these two age groups, these variations could be due to sampling. Men in Michoacan remain grouped in the infrequent and less frequent high maximum category until their sixties, while men in Madrid are grouped in the frequent low maximum category, especially after their twenties. Overall, as men grow older there is a shift to lighter categories of drinking in all three samples. For U.S. Hispanics, frequent heavy drinking is more frequent in

Table 2.—Drinking patterns by sex, in percent[a]

Category	Men			Women		
N	U.S. Hispanic (604)	Michoacan (478)	Madrid (1,638)	U.S. Hispanic (845)	Michoacan (682)	Madrid (1,862)
Abstainers	22	26	4	47	66	17
Infrequent	10	29	8	24	20	13
Less frequent low maximum	15	5	8	9	8	19
Less frequent high maximum	7	24	b	7	2	1
Frequent low maximum	11	3	46	3	3	41
Frequent high maximum	22	7	18	9	b	6
Frequent heavy drinker	14	6	16	2	1	3

[a] Ns are unweighted and percentages are weighted.

[b] ≤ 0.5.

Table 3.—Drinking patterns by age and sex, in percent[a]

Category	18-29			30-39			40-49			50-59			60+		
	U.S Hisp.	Mich.	Madrid	U.S. Hisp.	Mich.	Madrid	U.S. Hisp.	Mich.	Madrid	U.S. Hisp.	Mich.	Madrid	U.S. Hisp.	Mich.	Madrid
							MEN								
N	(204)	(183)	(440)	(169)	(105)	(321)	(90)	(58)	(290)	(63)	(64)	(278)	(78)	(68)	(308)
Abstainer	22	23	4	17	19	2	24	17	3	24	39	6	30	48	5
Infrequent	10	31	2	5	23	4	12	42	6	7	27	14	21	22	15
Less frequent low maximum	9	5	6	5	b	6	30	1	10	39	8	9	19	13	12
Less frequent high maximum	5	22	1	13	39	1	7	22	b	3	18	b	4	10	0
Frequent low maximum	13	3	33	6	2	49	9	4	51	7	1	50	15	4	53
Frequent high maximum	30	6	30	29	11	20	7	9	15	3	2	13	8	3	5
Frequent heavy	11	9	23	25	4	19	9	5	15	15	4	5	3	1	9
							WOMEN								
N	(282)	(296)	(499)	(231)	(164)	(398)	(129)	(66)	(326)	(87)	(67)	(274)	(116)	(89)	(364)
Abstainer	40	58	10	45	66	12	41	63	15	47	70	17	78	84	35
Infrequent	35	24	7	23	17	8	19	22	12	7	20	21	10	12	24
Less frequent low maximum	6	9	19	18	13	22	5	14	18	11	2	24	5	3	13
Less frequent high maximum	6	4	1	5	1	1	17	0	1	3	4	0	0	0	b
Frequent low maximum	2	5	42	3	2	49	2	1	48	4	0	35	6	1	26
Frequent high maximum	8	0	15	6	0	6	14	0	4	20	4	2	0	b	1
Frequent heavy	2	1	6	1	1	3	2	0	2	8	0	1	0	0	b

[a] Ns are unweighted and percentages are weighted.

[b] ≤ 0.5.

the 30-39 age group, for men in Michoacan it is never high, and for men in Madrid it is slightly higher in the 18-29 age group than in other groups. Also, for U.S. Hispanics there are really two drops in the rate of frequent heavy drinking, from the 30-39 to the 40-49 age group and then again from the 50-59 to the 60-plus group. For men in Madrid the decline is gradual in the first three age groups, and then there is a larger drop from the 40-49 to the 50-59 age group.

Among women, abstention increases with age in all three samples. The rise is gradual and small until the 50-59 age group, and then there is a bigger increase that affects all women. Women in Michoacan have higher rates of abstention in all age groups, followed by U.S. Hispanics, followed by women in Madrid. In spite of doubling their rate of abstention from the 50-59 to the 60-plus age group, women in Madrid still have a relatively low rate in this oldest group. Overall, patterns of drinking among women in Michoacan and Madrid remain stable in all age groups. In Michoacan women are either infrequent or less frequent low maximum drinkers. In Madrid the great majority of women are frequent low maximum drinkers, a pattern similar to that of the men. U.S. Hispanic women differ somewhat: They have a high rate of infrequent drinking in the 18-29 age group, then there is a rise in less frequent low maximum drinking in the 30-39 age group, followed by a rise in less frequent high maximum and frequent high maximum drinking in the 40-49 age group. The 50-59 age group has the highest rate of frequent high maximum drinking. Together, these changes suggest an increase in drinking among U.S. Hispanic women during middle age, that is, for those women who are 40 to 59 years old.

Frequency of Drunkenness

This analysis reports respondents' answer to the question, "How often in the past year did you drink enough to feel drunk?" Answers were coded in nine categories ranging from "every day or nearly every day" to "never in the past year," which for ease of presentation are collapsed in four categories ranging from "once a week or more often" to "never." (See table 4.) Among men who drink, drunkenness is more widespread in Michoacan than in the other two samples. Drunkenness in Madrid is rare. Among women drinkers, U.S. Hispanics reported more drunkenness than the other two samples. Almost no women reported getting drunk regularly. Those U.S. Hispanic women who reported drunkenness do so in the category "less than once a month but at least once a year."

Table 4.—Frequency of drunkenness by sex for drinkers only, in percent[a]

Category	Men			Women		
N	U.S. Hispanic (438)	Michoacan (352)	Madrid (1,570)	U.S. Hispanic (359)	Michoacan (262)	Madrid (1,540)
One a week or more often	5	1	1	[b]	0	[b]
1 to 3 times a month	3	4	1	2	0	[b]
Less than once a month but at least once a year	25	53	13	29	14	6
Never	66	41	84	69	86	94

[a] Ns are unweighted and percentages are weighted.

[b] ≤ 0.5

Attitudes About Drinking and Drunkenness

Respondents were asked whether they agreed or disagreed with a series of items about drinking and drunkenness, and these data are presented in table 5. U.S. Hispanic men and those in Madrid show similar levels of support for the items "having a drink is one of the pleasures of life" and "a way of being friendly." Support for the first item is slightly higher in Michoacan, while support for the second is lower than in the other two samples. However, endorsement of the next two items—"people who drink have more fun" and "people who drink have more friends"—is higher in Michoacan than in the other sites. The two items on drunkenness are also endorsed at different levels across samples and even within samples. However, endorsement is always relatively low. Agreement is more even among U.S. Hispanics: about a fifth of the Hispanic men agree with these two items. In Michoacan and Madrid there is more support for the item on drunkenness as an innocent way to have fun, support in Madrid being two times higher for this item than for the statement "it does some people good to get drunk once in a while."

The next item in the table—"a real man can hold is liquor"—has been taken to be an indicator of "machismo"; it receives more support in Madrid than among U.S. Hispanics or men in Michoacan. This is the item on which there is the largest differential between Madrid and the other two samples. The last two items express negative views toward drinking and are the items most supported by men, although support is higher in Michoacan and Madrid than among U.S. Hispanics.

Among women, the pattern of item endorsement, both across and within samples, is very similar to that observed among men. Support rates for the items "having a drink is one of the pleasures of life" and "having a drink with someone is a way of being friendly" are similar for U.S. Hispanic women and women in Madrid, while women in Michoacan have higher rates for the first item and lower for the second. Also, as among men and at very similar levels, women in Michoacan show more support than women in the other two samples for the items suggesting that people who drink have more fun and more friends than people who do not. The item on drinking and parties is more supported by women in Madrid. Support for the items on drunkenness is higher in Michoacan than in the other two samples. Women in Madrid seem to view the items on drunkenness differently. As among men, there is twice as much support for "getting drunk is just an innocent way of having fun" as for "it does some people good to get drunk once in a while." Support for the item "a real man can hold his liquor" is also higher among

Table 5.—Attitudes about drinking and drunkenness by sex—percentages of respondents who agree with statement[a]

Statement	Men			Women		
N	U.S. Hispanic (596)	Michoacan (483)	Madrid (1,638)	U.S. Hispanic (830)	Michoacan (698)	Madrid (1,862)
Having a drink is one of the pleasures of life.	45	52	41	29	52	29
Having a drink with someone is a way of being friendly.	54	31	58	39	31	42
People who drink have more fun than people who don't.	12	18	10	8	23	10
People who drink have more friends than people who don't.	17	29	10	16	30	9
A party isn't really a party unless alcoholic beverages are served.	26	25	38	14	22	27
It does some people good to get drunk once in a while.	20	26	16	11	24	10
Getting drunk is just an innocent way of having fun.	16	35	33	9	29	23
A real man can hold his liquor.	16	14	49	15	22	42
There is nothing good to be said about drinking.	52	78	80	70	87	90
Drinking is one of the main causes of people doing things they shouldn't.	79	91	88	87	94	91

[a] Ns are unweighted and percentages are weighted.

women in Madrid; their rate of support for this item is three times that for U.S. Hispanics and twice that for Michoacan. Finally, the items expressing negative views toward alcohol consumption receive as much support among women as they do among men. This support is especially high in Michoacan and Madrid.

Reasons for Abstaining or Limiting Drinking

This analysis reports on respondents' answers to the question, "How important to you is each of the following reasons for abstaining from alcohol beverages or being careful about how much you drink?" The question was asked of both abstainers and drinkers. Men in Michoacan show higher rates of support than U.S. Hispanics and men in Madrid for all the items in the table (table 6). This difference is particularly high for the items "family or friends get upset," "it may interfere with your work," "drinking often makes you do things you are sorry for," and "drinking leads to losing control over your life." Rates for U.S. Hispanics and men in Madrid are similar. The only item that receives widespread support in all three samples is "drinking is bad for your health." The same differences observed for men occur among women. Women in Michoacan show higher rates of support than U.S. Hispanic women and women in Madrid. Almost all items in the table are endorsed by more than 90 percent of the women in Michoacan, while endorsement by U.S. Hispanic women and women in Madrid is never higher than 70 percent, with two exceptions. Almost all women are in agreement that "drinking is bad for your health," and a higher percentage of women in Michoacan and Madrid agree that drinking "costs too much when you need money for other things."

Drinking Norms for Specific Gender and Age Groups

Respondents were asked, "In your opinion what is the most that each of the following kinds of people should drink at one time?" Answers were coded in four categories: "no drinking," "1 or 2 drinks," "enough to feel the effects but not drunk," and "getting drunk is sometimes all right." The data in table 7 are presented with the categories "1 or 2 drinks," "enough to feel the effects," and "getting drunk is sometimes all right" combined into "permit any drinking"; and with the categories "enough to feel the effects" and "getting drunk is sometimes all right" combined into "permit drinking enough to feel the effects of alcohol."

Table 6.—Reasons for abstaining or limiting drinking, by sex—percentages of respondents who say reason is "very important" or "somewhat important"[a]

	Men			Women		
Reason N	U.S. Hispanic (601)	Michoacan (483)	Madrid (1,638)	U.S. Hispanic (844)	Michoacan (698)	Madrid (1,862)
Drinking is bad for your health.	83	93	94	85	95	97
It costs too much when you need money for other things.	72	90	84	67	94	89
Your family or friends get upset when you drink.	47	73	37	45	81	38
It may interfere with your job or work.	58	83	57	55	89	58
You are afraid of becoming an alcoholic.	39	65	43	37	65	47
Drinking often makes you do things you are sorry for later on	49	92	47	43	94	49
Drinking can make you feel sick.	63	93	63	66	94	62
Drinking can get you into trouble with the police or authorities.	66	84	47	61	90	48
Drinking leads to losing control over your life	62	91	50	68	93	53

[a] Ns are unweighted and percentages are weighted.

Table 7.—Drinking norms for gender and age groups by sex, in percent[a]

Question asked about	Permit any drinking			Permit drinking enough to feel the effects of alcohol		
	U.S. Hispanic	Michoacan	Madrid	U.S. Hispanic	Michoacan	Madrid
		MEN				
N	(597)	(480)	(1,638)	(597)	(480)	(1,638)
A boy about 16 years old	14	20	30	1	4	1
A man about 21 years old	82	54	87	26	15	2
A man about 30 years old	89	68	94	38	30	3
A man about 40 years old	87	64	92	43	27	4
A man about 60 years old	70	30	60	25	8	2
A girl about 16 years old	11	12	23	1	[b]	1
A woman about 21 years old	70	32	72	20	3	2
A woman about 30 years old	88	44	82	29	7	2
A woman about 40 years old	77	33	76	30	6	2
A woman about 60 years old	57	15	38	16	2	1

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[a] Ns are unweighted and percentages are weighted.

[b] ≤ 0.5.

Table 7.—Drinking norms for gender and age groups by sex, in percent—Continued

Question asked about	Permit any drinking			Permit drinking enough to feel the effects of alcohol		
	U.S. Hispanic	Michoacan	Madrid	U.S. Hispanic	Michoacan	Madrid
			WOMEN			
N	(843)	(695)	(1,862)	(843)	(695)	(1,862)
A boy about 16 years old	8	16	21	1	2	[b]
A man about 21 years old	73	57	82	15	9	1
A man about 30 years old	85	73	92	34	28	2
A man about 40 years old	82	63	89	33	26	2
A man about 60 years old	58	31	45	22	10	[b]
A girl about 16 years old	5	11	16	0	[b]	[b]
A woman about 21 years old	58	37	65	5	2	[b]
A woman about 30 years old	73	52	77	13	8	[b]
A woman about 40 years old	68	42	70	12	7	1
A woman about 60 years old	40	19	31	6	3	[b]

[b] ≤0.5.

Men permit more drinking by men than by women, and U.S. Hispanic men and those in the Madrid sample are more liberal with respect to permitting any drinking than men in Michoacan. Differences between U.S. Hispanics and the Madrid sample occur for drinking by a boy or a girl 16, where men in Madrid are more liberal, and drinking by a man or a woman 60 years old, where U.S. Hispanics are more liberal. The permission that men in Madrid give for drinking seems to be strictly for moderate drinking, for they show very low rates of support for drinking enough to feel the effects of alcohol. U.S. Hispanic men are more supportive of drinking at this level than men in the other two samples. Sixteen-year-olds are the one group for which there is general agreement that there should be no drinking to feel the effects.

The data for women resemble that for men. Women are more liberal about drinking by men than by other women; U.S. Hispanics and women in Madrid are more liberal regarding "any drinking" than women in Michoacan; women in Madrid are more liberal toward drinking by a 16-year-old boy than U.S. Hispanics; U.S. Hispanics are more liberal than the others regarding drinking by a man or a woman 60 years of age. Also, as happens with the men, U.S. Hispanic women are more liberal than women in the other two samples regarding "drinking enough to feel the effects."

Drinking Norms for Specific Social Situations

Respondents were asked how much they thought it was all right for a person to drink in various social settings. The answers were coded as "no drinking," "1 or 2 drinks," "enough to feel the effects but not drunk," and "getting drunk is sometimes all right." For this analysis the last three categories were combined under "permit any drinking," and the last two under "permit drinking enough to feel the effects of alcohol." When looking at the data for men under "permit any drinking," the following situations stand out as being "drier" than all the others: "parent, spending time with small children," "during work hours," and "when going to drive a car."

In general, U.S. Hispanics and men in Madrid are more liberal than men in Michoacan (table 8); and men in Madrid are the most liberal with respect to drinking by a husband having dinner with his wife, by a man and a woman at a bar, and by coworkers out to lunch. When U.S. Hispanics and men in Madrid are compared with men in Michoacan, the largest differences are for the items on a "parent, spending time with small children," a "woman out at a bar," "with friends at home," "with friends after work," and "with people after sports events." U.S. Hispanics and men in Michoacan are

Table 8.—Drinking norms for different social situations, in percent[a]

Social situation	Permit any drinking			Permit drinking enough to feel the effects of alcohol		
	U.S. Hispanic	Michoacan	Madrid	U.S. Hispanic	Michoacan	Madrid
			MEN			
N	(598)	(479)	(1,638)	(598)	(479)	(1,638)
At a party, at someone else's home?	87	79	94	36	28	9
As a parent, spending time with small children?	21	5	31	1	5	0
For a husband having dinner out with his wife?	72	60	93	4	3	1
For a man out at a bar with friends?	82	79	94	33	53	4
For a woman out at a bar with friends?	61	31	79	18	10	2
During working hours, not just at lunch?	7	8	10	b	0	0
For a couple of coworkers out to lunch?	20	20	59	b	1	0
When with friends at home?	83	49	85	25	8	3
When getting together with friends after work before going home?	64	27	62	15	6	10
When getting together with people at sports events or recreation?	66	24	63	16	4	1
When going to drive a car?	11	3	5	2	b	0

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[a] Ns are unweighted and percentages are weighted.

[b] ≤ 0.5.

Table 8.—Drinking norms for different social situations, in percent—Continued

Social situation	Permit any drinking			Permit drinking enough to feel the effects of alcohol		
	U.S. Hispanic	Michoacan	Madrid	U.S. Hispanic	Michoacan	Madrid
			WOMEN			
N	(840)	(685)	(1,862)	(840)	(685)	(1,862)
At a party, at someone else's home?	81	81	90	18	13	4
As a parent, spending time with small children?	10	35	22	[b]	3	0
For a husband having dinner out with his wife?	72	64	89	3	4	1
For a man out at a bar with friends?	80	71	91	32	41	3
For a woman out at a bar with friends?	61	38	73	8	10	1
During working hours, not just at lunch?	2	9	4	[b]	0	0
For a couple of coworkers out to lunch?	8	10	55	0	1	0
When with friends at home?	71	51	81	10	7	1
When getting together with friends after work before going home?	53	33	54	6	5	0
When getting together with people at sports events or recreation?	55	19	56	8	1	0
When going to drive a car?	3	4	2	[b]	0	0

[b] ≤ 0.5.

equally restrictive about drinking by coworkers out to lunch, but are more liberal than men in Madrid with regard to drinking to feel the effects of alcohol. This is especially so at parties, by a man or a woman at a bar, when with friends after work, and at sports events and recreation.

Women in Madrid are more liberal than other women on whether to "permit any drinking." This is especially so for drinking at a party, drinking by a husband dining with his wife, by a man and a woman at a bar, and by coworkers out to lunch. U.S. Hispanic women are not as liberal as women in Madrid but are less restrictive than women in Michoacan. The only item for which women in Michoacan are more liberal than those in the other samples is "as a parent, spending time with small children." In general, U.S. Hispanic women and women in Michoacan are also more liberal than women in Madrid regarding drinking to feel the effects of alcohol. This is especially so if such drinking is done by a man at a bar but is also true if the drinking occurs at parties or is done by a woman at a bar.

Discussion

Frequency of Drinking, Drinking Patterns, and Frequency of Drunkenness

Differences in alcohol consumption as represented by the results on frequency of drinking, drinking patterns, and frequency of drunkenness are striking; and each sample in this study has a pattern of its own. First, there is more drinking in Madrid than in the other two samples. Alcohol consumption is widespread, as indicated by the low rates of abstention: Women in Madrid have a rate of abstention lower than U.S. Hispanic men or men in Michoacan. It is only when these women are 60 years of age or older that they have a rate of abstention closer to that reported by Hilton (1987) for all women in the U.S. general population. Rates of frequent high maximum and frequent heavy drinking among Madrid men are as high as those for U.S. Hispanics, but men in Madrid still have a 46 percent rate of frequent low maximum drinking against 11 percent for U.S. Hispanic men. Women in Madrid have a rate of frequent low maximum drinking 14 times greater than that for U.S. Hispanics or women in Michoacan. Thus, the dominant pattern of drinking in Madrid is that associated with Mediterranean or wine drinking regions, which of course Madrid is. Drinking is frequent, but since the amount consumed on each occasion is small, drunkenness is uncommon. This should not come as a surprise in a country where 55 percent of the alcohol ingested is consumed as wine. The recent increase in beer consumption reported by Salamanca (1984), albeit dramatic, does not seem to have been either large enough or long lasting enough to change the basic pattern of alcohol consumption in Spain.

Alcohol consumption in Michoacan is at the other extreme from consumption in Madrid. Drinking in Michoacan, especially among men, is infrequent and usually involves larger quantities of alcohol than in Madrid—for instance, drinking five or more drinks at a sitting. The contrast is sharp not only among men but also among women, for whom drinking levels in Michoacan are much lower than in Madrid. The frequency of self-reported drunkenness in Michoacan is, therefore, higher than that for Madrid, and the rate of men who had not been drunk in the 12 months prior to the survey is twice as high in Madrid as it was in Michoacan. This relationship between drinking and drunkenness has been reported in other recent surveys in Mexico (Calderon et al. 1981; Roizen 1981; Caetano et al., unpublished). Taylor's (1979) description of drinking in colonial Mexican villages suggests that drinking and drunkenness were closely associated in Mexico in pre-colonial times, occurring as ritual drinking among the Indians. The Spanish Conquest increased alcohol consumption but did not substantially change earlier patterns of drinking, and early colonial drinking by Indians included ritual drinking where devotion was measured by degree of intoxication. Later on, peasant drinking adjusted itself to the festivities of the Catholic calendar and other social gatherings (baptisms, weddings, etc.) and drinking became more secularized. The Spaniards, on the other hand, had a quite different view of drinking. Drunkenness was frowned upon, and drinking was to be done in moderation. To the Spaniards, drinking wine moderately was a symbol of civilization, something that the Indians were not capable of doing.

In comparison to Michoacan and Madrid, drinking by U.S. Hispanics is more diverse and less stereotyped. This is especially true among the men, who are distributed more homogeneously across the categories of drinking frequency or across the quantity-frequency index than men in Madrid or Michoacan. For women, differences between U.S. Hispanics and Michoacan are mainly around abstention and frequent high maximum drinking. There are also some differences in the frequency of drunkenness, which for men is more widespread in Michoacan and for women is more common among Hispanics. A recent analysis of drunkenness among Mexican Americans in the U.S. Hispanic sample and in Michoacan showed that drunkenness is more often associated with frequent high maximum and frequent heavier drinking among the former than among the latter. Based on this evidence, Caetano and Medina-Mora (unpublished) have suggested that drunkenness in Mexico may be more associated with festivities and as such would be more prevalent among all categories of drinkers. Among Mexican Americans drunkenness would be more independent of the calendar of holidays and would be more associated with regular heavier drinking. An accurate description of places, occasions, and reasons for drunkenness would help in elucidating this issue, but unfortunately, these data are not available.

One of the possible explanations for the homogeneity of drinking patterns in Madrid and Michoacan, on one side, and the diversity among U.S. Hispanics, on the other, is the composition of the populations sampled. The sample of U.S. Hispanics is a national probability sample and as such is formed by individuals with a variety of backgrounds—nationals of different Latin American countries as well as U.S.-born Hispanics—interviewed all across the United States. When the U.S. sample is broken down by national origin, this diversity is clear (Caetano, in press). Among men, for instance, Mexican Americans are concentrated in the frequent high maximum (26 percent) and frequent heavy drinking category (18 percent), the majority of Puerto Ricans are less frequent low maximum drinkers (41 percent), Cuban Americans are either infrequent (31 percent) or less frequent low maximum drinkers (38 percent), and those from other Latin American countries are concentrated in the less frequent low maximum (21 percent) and frequent low maximum (32 percent) categories. Although some of these results need to be interpreted with caution because of the small number of respondents in some of these national groups, they underline the heterogeneity beneath the convenient "Hispanic" denomination used by the U.S. census.

Independent of the heterogeneity of the Hispanic population, drinking patterns show substantial variations across the United States. The rate of abstention in the general population, for instance, can go from 18 percent in New England to 66 percent in the East South Central region of the country (Room 1983), and there are substantial differences in drinking patterns and alcohol problems (Cahalan and Room 1974; Clark and Hilton 1986). Even for a more homogeneous group such as U.S. blacks, there are substantial differences by region (Herd, unpublished). In contrast, the samples from Michoacan and Madrid were drawn from more circumscribed regions: in both cases a city and some adjoining rural units were the sampled areas. More cultural homogeneity and thus less diversity in drinking patterns would be expected in these samples than in the U.S. Hispanic one.

The distribution of drinking patterns by age shows changes in drinking pattern within and across samples. Perhaps the most stable sample is that for Madrid. Frequent low maximum drinking is the predominant pattern of drinking in all age groups. The abstention rate among men in Madrid is also very stable, remaining low even among those 60 years of age and older. This is, of course, different from U.S. Hispanic men and men in Michoacan, among whom abstention follows the much more common pattern of increasing with age. On the other hand, frequent heavy drinking among men in Madrid follows the more familiar pattern of being higher during their twenties and lower thereafter. Here, U.S. Hispanics are the ones in contradiction with usual American epidemiological wisdom. As described before (Caetano 1984, in press), among U.S. Hispanics, frequent heavy drinking is more common during their thirties and not during their twenties. Among women there are less variations in drinking with age. Abstention rates increase substantially with age, and among U.S. Hispanics there is an increase in the rate of frequent high maximum drinking for women in the 40-59 age group. A large proportion of these women are employed, have at least some college education, are highly acculturated to U.S. society, and were born in the United States of at least one parent also born in the United States. These sociodemographic attributes differentiate them from other U.S. Hispanic women who are not in the workforce and whose main roles are within the family circle; this may give them greater independence from traditional roles and, consequently, more liberty to drink. Forthcoming analyses of the data from Madrid should establish the relationship between drinking and sociodemographic characteristics, revealing the predictors of abstention and drinking among women in that sample. For women in Michoacan, results of a logistic regression on abstention versus drinking indicate that drinking is more common among the young and among those with higher incomes (Caetano and Medina-Mora, unpublished), while among U.S. Hispanic women it is more frequent among those with higher education and greater acculturation (Caetano 1987*b*).

It is difficult to say whether the patterns of drinking described for Madrid and Michoacan are representative of a wider population in each of the two countries. As noted above, buried underneath the statistical representativeness of the U.S. Hispanic sample lies a wide diversity of drinking patterns when the sample is divided by age, education, or national origin, and it is possible that the same happens with the other two samples. Comparisons with other surveys in search for regularities are hampered by differences in methodology. However, within certain limits the pattern of drinking described for Michoacan seems to fit previous descriptions of drinking in

Mexico (Calderon et al. 1981; Medina-Mora et al. 1980; Natera and Terroba 1982; Terroba et al., unpublished). Analysis of the wider "representativeness" of the sample from Madrid is more difficult. A number of general population surveys patterned after the World Health Organization study of Community Response to Alcohol-Related Problems (Rootman and Moser 1985) are now under way in different regions of Spain, but data are not yet available. Salamanca (1984) reported survey data on alcohol consumption from a probability sample of the whole Spanish population, and her results could be a source of comparison. However, this survey collected data on typical drinking during workdays and holidays, and unfortunately, very little data are presented on consumption in the 12 months prior to interview. Results using this time frame for frequency of drinking are presented for both sexes together, and the data for the Madrid sample has been recalculated to fit this comparison. Salamanca reported a 24 percent rate of abstention, which is higher than the 11 percent for Madrid. The rates of daily drinking, weekly drinking, and drinking less than weekly but at least once a year in her sample and in Madrid are 52 percent versus 41 percent, 18 percent versus 22 percent, and 5 percent versus 26 percent. Thus, Salamanca's sample has more respondents at both extremes of the frequency continuum, that is, more abstainers and more daily drinkers. But in spite of these differences, the two samples have a high frequency of daily drinking, which speaks in favor of some comparability and uniformity of drinking patterns in Spain.

Reasons for Abstention or Moderation

All reasons for abstaining or drinking moderately receive wider support in Michoacan than in the other two settings, with the sole exception of the item "drinking is bad for your health," which receives equal support in Madrid and in Michoacan. The pattern of responses for Michoacan has been recently discussed by Caetano and Medina-Mora (unpublished) in the framework of a comparison with reasons for abstaining among Mexican Americans. In brief, this pattern is very similar to that described by Roizen (1981) for the community of Tlalpan, in the outskirts of Mexico City. Instead of predicting individual drinking behavior, Roizen suggested that the pattern of responses to these items may be a cultural characteristic developed as a response to a pattern of drinking that leads to or is seen as responsible for a high rate of alcohol problems. Inconsistencies between patterns of drinking and the data on reasons for abstention or moderation in this paper suggest that answers to these items may express the cultural image associated with alcohol in different cultures rather than providing an inventory of reasons explaining personal behavior (Roizen 1981; Caetano and Medina-Mora, unpublished). First, differences in abstention between Michoacan and U.S. Hispanics are not large, and yet there is a wider support for reasons for abstention in Michoacan than among U.S. Hispanics. Second, since this list of items also referred to reasons for moderation, and since Madrid has a large number of moderate drinkers and the lowest rate of drunkenness, these items should also be widely supported by respondents in that sample. Finally, women drink less than men but have a pattern of support for these items that is very close to that for men.

The item on "losing control over your life" also has interesting cultural implications. During many years loss of control was thought to be the central indicator of dependence on alcohol (Jellinek 1960). More recently, new formulations of this phenomenon have been put forward (Edwards and Gross 1976) and it is now seen as one among many indicators of dependence on alcohol, though Alcoholics Anonymous ideology still retains the elements of the traditional definition. Loss of control has also been conceptualized as a culture-bound phenomenon (Levine 1982; Room 1985). As such it might represent a characteristically American preoccupation with maintaining control over one's life, and support in other cultures might result from its importation into these cultures by professionals as an explanation for continued heavy drinking. Such importation has occurred in Latin America (Caetano 1985), and it is quite possible that it has also occurred in Spain, thus explaining the wide support received for this item in the sample from Madrid. Of course, that importation may have been successful because the item translated a latent preoccupation already present in these cultures.

Attitudes About Drinking and Drunkenness

As with reasons for abstaining, there does not seem to be a strong relationship between attitudes toward drinking, drunkenness, and drinking behavior. Thus, while 96 percent of the men in Madrid are drinkers, only 41 percent agree that having a drink is one of the pleasures of life, and only 58 percent agree that having a drink with someone is a way of being friendly. In contrast, 80 percent of these same men agree that "there is nothing good to be said about drinking." Cross-tabulation of these two items ("nothing good" and "pleasures of life") would certainly yield a number of respondents who agree with both, suggesting that respondents may not have a coherent view of alcohol. What is said with respect to men in Madrid is also true of respondents in the other two samples.

The eminent place occupied by negative views about alcohol in Mexican culture has already been pointed out (Roizen 1981; Caetano and Medina-Mora, unpublished). It is surprising that such views would be so widespread in a country with no tradition of a temperance movement like that in the United States. It is even more surprising that negative views about alcohol would receive such wide support in Madrid. Spain is a wine drinking country, one whose culture has been traditionally associated with alcohol use that is integrated into everyday life and that tends to highlight the "goodness" rather than the "badness" associated with drinking. A possible explanation for this contradiction lies in the strong tension between cultural acceptance and cultural rejection of alcohol that may exist in any culture. The fact that a higher percentage of people in Madrid than among U.S. Hispanics or in Michoacan support the item, "a real man can hold his liquor," suggests that underneath the apparent liberality of drinking practices there exists a strong emphasis on control and moderation, though the control seems to be directed more at the behavior resulting from drinking rather than at the drinking itself.

The pattern of responses for the items on "having more fun," "having more friends," a "party is not a party," and the two items on drunkenness are difficult to interpret. There are wide variations in the rate of support across samples and within samples for some of these items. Thus, people in Madrid show less support than people in Michoacan for the items on having more friends and having more fun. But then there is more support in Madrid than in Michoacan and among U.S. Hispanics for the item on parties. At the same time, within Michoacan there is some variation in rate of support for the items having more fun and having more friends, and within Michoacan and Madrid for the two items on drunkenness. Support for seeing drunkenness as an innocent way of having fun is twice as high in Madrid as support for the statement that it is "good to get drunk once in a while."

Why these apparent inconsistencies? It is possible that the meaning of these items varies from culture to culture and that within a culture apparently similar items, like the two on drunkenness, are in fact very different. These items would then be tapping different dimensions of respondents' attitudes toward drinking. For instance, the item stating that "it does some people good to get drunk once in a while" may be understood as advice to get drunk and intentional drunkenness, while stating that "drunkenness is an innocent way of having fun" can be construed as referring to drunkenness that is more casual, less intentional, and thus more acceptable. In places with a strong emphasis on moderation, as seems to be the case in Madrid, these different interpretations could swing the balance of opinions in favor of the second item. Factor analysis could provide some clues as to how these items cluster together. However, the categorical nature of the data precludes the use of this technique. Since the data are dichotomous (agree versus disagree), nonparametric or phi correlations will be used to examine the relationship between these items in forthcoming analyses.

Drinking Norms

The data on drinking norms by gender and age groups show clearly the strong emphasis on drinking with moderation that exists in Madrid. While the proportions of U.S. Hispanics and people in Madrid allowing "any drinking" to almost all gender and age groups are similar, men and women in Madrid are far more restrictive than U.S. Hispanics with regard to drinking enough to feel the effects of alcohol. This restriction is applied in a remarkably egalitarian way across all gender and age groups, suggesting that contrary to what happens among U.S. Hispanics or in Michoacan, in Madrid, sex and age are not seen as prerogatives for heavier drinking. A milder form of this egalitarianism can also be observed with regard to the proportion of respondents in Madrid who allow any drinking to the various gender and age groups. Permission to drink is more evenly distributed in Madrid than among U.S. Hispanics or in Michoacan, especially because of the relatively large proportion in Madrid who allow a boy or a girl 16 years of age to drink.

The data for drinking norms in different social situations parallel that for gender and age groups. Respondents in Madrid are more liberal with regard to "any drinking," followed by U.S. Hispanics, followed by respondents in Michoacan. However, there is practically no situation in which a substantial proportion of respondents in Madrid allow drinking to feel the effects of alcohol. The pattern of responses for men and women is very similar, suggesting once again that answers may be expressing a cultural view of alcohol use rather than personal opinions shaped by the respondent's own alcohol consumption. A similar separation between this kind of data and the respondents' drinking was noticed by Roizen (1981) in his comparison of drinking in Zambia, Scotland, and Mexico.

One exception to the similarity between men and women is the data from Michoacan on drinking "as a parent, spending time with small children." In this sole case, women in Michoacan are more liberal than any other group of respondents, possibly because women spend more time than men caring for small children in Mexican society and thus have fewer chances of separating drinking from parenting. Knupfer (1960) has made a similar point with regard to drinking by women in the United States. The largest difference between Madrid on one side, and U.S. Hispanics and Michoacan on the other, is for the item on "any drinking" by a couple of coworkers out to lunch. For those who know Spanish culture and its emphasis on drinking wine at mealtime, this difference is not surprising. Salamanca (1984) reported that in her national sample of Spain, respondents' main reason for drinking wine was "because it goes well with food." The items for which there is more agreement across the three samples are those referring to drinking during working hours and before driving a car: in these cases the consensus is that there should be no drinking. Similarly, parties, bars, and the home are the environments in which more drinking is allowed to take place in all samples.

These data suggest that cultures may share general norms regarding who, where, when, and how to use alcohol, while at the same time they have different parameters to organize access to alcohol and control levels of consumption. In Michoacan, drinking norms are mainly organized around gender and age: men are given more permission to drink than women, and adults are given more permission than the very young or the old. Among U.S. Hispanics, norms are also organized around gender and age but are much more egalitarian than in Michoacan: women and the old are given more freedom to drink than in Michoacan. In Spain, moderation plays a much more important role in the structure of control than among U.S. Hispanics or in Michoacan. There are some differences in norms controlling the access to alcohol by men, women, the young, and the old, but no one is at liberty to drink to feel the effects of alcohol. In other words, in Spain access to alcohol is more egalitarian than among U.S. Hispanics or in Michoacan, but drinking must be done moderately—heavier drinking is not allowed.

Conclusions

The main objective of cross-cultural research is to learn more about alcohol use in general and about the relationship between alcohol consumption and cultural factors in particular. Research in the United States, in Mexico, and to a lesser extent, in Spain had already suggested that each of these cultural settings has its distinctive patterns of alcohol use, problems, reasons for drinking and abstaining, and drinking norms. The study reported here confirms these observations very clearly. Each of the groups studied has very distinct patterns of alcohol use. Drinking in Madrid is typical of that in a wine drinking country. It is widespread, done frequently but lightly, and should be done moderately by all. Whether the new tilt toward beer drinking will disrupt these patterns and trigger drinking that is heavier and more disruptive remains to be seen and is a reason for carefully monitoring Spanish drinking practices. Drinking in Mexico is infrequent and heavier. Drinking is almost a privilege of adult men. Having once gained access to alcohol, they are allowed considerable freedom to drink. Drinking by U.S. Hispanics is more diverse, perhaps as a result of the inherent cultural diversity of this ethnic group as well as of the country as a whole. Access to alcohol is more egalitarian than in Mexico, a country from which many U.S. Hispanics came.

That the three groups show three very different patterns of alcohol use is testimony to the diversity of "Hispanic" culture. Although sometimes seen from the outside as a monolith due to their common language, common religion, and common colonial past, the various Spanish-speaking countries of the former Spanish empire represent different cultures whose variety these differences in drinking help to underline. The differences between Michoacan and Madrid are especially compelling, given the history shared by these two countries during colonial times. This comparison shows the survival in Mexico of a pattern of drinking that has its roots in Indian ritual drinking before the Spanish Conquest. The pattern persisted in spite of, and perhaps because of, Spanish domination; it may have been one of the means the conquered Indians had of preserving their cultural identity. In different ways, this permanence, along with the diversity of drinking across the three samples and the homogeneity of drinking patterns in Madrid and Michoacan speak in favor of a strong association between alcohol use and culture. Research on the relationship between drinking and acculturation with U.S. Hispanics provides another source of support for this contention. This research suggests that once individuals adopt new cultural bearings, their pattern of alcohol use, attitudes, and norms toward alcohol consumption change accordingly (Caetano 1987*a,b,c*; Caetano and Medina-Mora, unpublished).

Last but certainly not least, this study also provides a number of new research questions. Some of these might be answered by further analyses of the data at hand. By looking at the relationship between drinking patterns and sociodemographic correlates, it will be possible to check how deep the homogeneity of drinking described in Madrid and Michoacan is. Is drinking in urban areas similar to that in rural areas? Are there different patterns by social class? What are the differences between Mestizo drinking and upper class drinking in Mexico? Have the descendents of the Spanish conquistador retained the ideal of moderation that was already characteristic of Spain in colonial times? Spain also has population groups with strong claims to their own ethnic identity. Can these groups be identified in the sample from Madrid, and if they can, is drinking in these groups different from that of the majority?

Other questions require further data collection. The meaning of drunkenness, the origins of moderation in Spain and intoxication in Mexico, and the relationship between moderation and loss of control are but a few examples of questions worth pursuing. In conducting this research different methodologies can be combined. Historical, ethnographic, and epidemiological methods complement each other and, if used in combination, will constitute a powerful armamentarium in developing fruitful lines of research for future international collaboration.

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The Lessons Learned—A Summing Up

Implications for Public Health Policy and Research Issues

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I. Implications of Cross-Cultural Studies for Public Health Policies

On August 15, 1986, the last day of the International Symposium on Patterns of Alcohol Use and Misuse Among Different Populations, the participants discussed the implications of cross-cultural research for public health policy and some lessons for the would-be researcher. The following is a distillate of that discussion.

Avoiding Invidious Comparisons

Marcus Grant began the discussion by emphasizing the importance of researchers' stepping back from their own research interests to look at the different meanings "comparative research" can have for those in the countries being studied. He pointed out that it is often difficult to avoid potentially invidious comparisons. From a political standpoint, comparisons often carry with them the implication of being "better"—or "worse"—than the country or countries with which comparisons are being made. Even differences in per-capita alcohol consumption may carry the politically volatile implication that the citizens of country X drink more than those of country Y, and that therefore alcohol problems are more poorly handled in country X.

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It is crucially important to be sensitive to potentially invidious comparisons in designing, analyzing, and interpreting the results of cross-cultural research. Comparisons that are made or will be made are *not* value free, but are almost inevitably value laden. The more areas directly related to public policy are studied, the more likely that research findings will be seized upon, exaggerated, and used for political purposes. Care must be taken to avoid, insofar as possible, invidious comparisons and to make it difficult for one's data to be inappropriately interpreted.

Leland Towle pointed out that sensitivity to possible political implications of findings should not be limited to developing countries, since they can be an important consideration in any country.

Research Training Obligation

A second concern highlighted by Grant is the responsibility of researchers from countries with a well-developed research capacity to train their colleagues in developing countries in research technology. In addition to stressing a need to be sensitive to the specific culture, he emphasized the ways in which cross-cultural studies can provide training opportunities to indigenous staff and can assist them in establishing their own research tradition. For this to occur, a carefully considered effort must be made that includes training as an integral part of the research plan. Even in countries that can not afford the luxury of full-time researchers, such efforts can encourage local talent to become part-time researchers. Research in developing countries should mean just that—research *in* rather than *on* the country involved.

Implications for Health Promotion

Irving Rootman summarized his observations on the implications of cross-cultural research for health promotion. He emphasized that in the 2 years preceding the conference, a consensus has developed concerning this area. That consensus is exemplified by a publication of the European office of the World Health Organization, *A Discussion Document on the Concept and Principles of Health Promotion* (WHO 1984). According to this monograph, now a manifesto for people working in the area, health promotion is the process of enabling people to increase their control over their health and improving it. Health is defined as the extent to which an individual or group is able to realize aspirations and satisfy needs on the one hand, and on the other, to change or cope with the environment. Health is therefore a resource for daily life, not the objective of living. It is a positive concept emphasizing social and personal resources as well as physical capacities.

Rootman pointed out that five principles of health promotion are enunciated in the WHO document. Health promotion:

- Involves the population as a whole in the context of their everyday life, rather than focusing on people at risk for specific diseases.
- Is directed toward action on the determinants or causes of health.
- Combines diverse, but complementary, methods or approaches, including communication, education, legislation, fiscal measures, organizational change, community development, and spontaneous local activities to promote better health.
- Aims at effective and concrete public participation.
- Is basically an activity in the health and social fields, *not* a medical service. However, health professionals, particularly those providing primary health care, have an important role in nurturing and facilitating health promotion.

Although the document argues for the desirability of research support, Rootman questioned how much of the research discussed during the meeting was directly relevant to health promotion. However, there are, he observed, some relevant lessons implicit in the WHO project on Community Response to Alcohol-Related Problems. The community and action orientation of the WHO project is compatible with health promotion and can easily be adapted to it. The research conducted underscores the substantial differences within and between countries in virtually every aspect of alcohol use. This is probably true of other health behaviors as well. This implies that health promotion policies and interventions must be specifically designed to fit the unique circumstances of the community or country involved rather than regarded as universal. Another lesson for policymakers to keep in mind is that promoting change is a long-term and sometimes discouraging process. However, with patience and persistence, health enhancing changes can be achieved in collaboration with local people.

Finally, Rootman emphasized the importance of making research results comprehensible and meaningful to people working in health promotion. To that end, he urged that reports be written that are designed for people who have neither the time nor the patience to wade through hundreds of pages of text and tables. Health promotion officials should also be invited to meet with researchers from time to time to discuss the possible implications of research for health promotion. Questions that are studied should include some of basic concern to policymakers. One example would be analyses of the relationship between alcohol consumption and self-perceived health. Questions on smoking, nutrition, and other health-related behavior might also be included in order to examine the interrelationship of these several areas. More studies might also be conducted of the relative effectiveness of various approaches to health promotion. These are likely to be equally appropriate to preventing alcohol-related problems.

In the ensuing discussion, others emphasized the importance of appropriate timing of training and the importance of it taking into account such local conditions as availability of computer technology and its level of sophistication.

Becoming familiar with local circumstances and having substantive rather than pro forma contact with colleagues in the host country was stressed. Such contact is likely to reduce the likelihood of failing to note the significance of local conditions that may be important in examining the implications of behavior in affecting health. For example, the acceptability of breastfeeding in public in Zambia means that women sometimes feed their infants at the same time they drink beer in the local tavern. This increases the likelihood that infants will be exposed to alcohol through their mother's breast milk. The significance of other local conditions may be missed if in-depth contact with the culture is not made.

A tolerance for imperfection is needed for cross-cultural research, since this work must often be done under less than optimal conditions. This means that imperfect or "dirty" data often result, rather than the neat data we might prefer. Despite their limitations, such data often still permit useful comparisons to be made.

The importance of describing research results succinctly and in oral form if they are to have impact on busy officials was also emphasized. In countries with a strong tradition of oral communication, effective oral presentations are often critical if research results are to be translated into public policy.

Outlining well-focused action alternatives is more likely to have impact on leaders than more abstract, theoretical discussions of problems.

International research can also be effective in giving colleagues in developing countries the sense they are contributing members of the international scientific community. This sense of participation also has the desirable effect of encouraging greater future participation and developing an independent research capacity.

II. Issues and Problems in Cross-Cultural Research

Symposium participants summarized issues and problems in the research that had been discussed from an epidemiological, ethnographic, and clinical perspective.

An Epidemiological Perspective

Thomas Babor[3] prefaced this discussion by emphasizing the difficulties of interdisciplinary communication even when all of those involved are nominally epidemiologists. He pointed out that chronic disease epidemiologists concerned with, say, rates of liver cirrhosis, are likely to emphasize aggregate data and other methods peculiarly suited to their interest in chronic disease. Psychiatric epidemiologists, by contrast, are more likely to be concerned about diagnostic interviewing techniques as applied to large-scale population samples, since that is fundamental to their orientation. Epidemiologists are traditionally concerned with the distribution or prevalence of disease in populations. But they are also concerned with teasing out possible causes of disease and, as this conference demonstrated, epidemiologists may also be called upon to offer judgments with respect to possible action alternatives based on their findings.

Both psychiatric epidemiology and alcohol studies place considerable reliance on information gathered by self-report. It is therefore incumbent upon researchers to concern themselves with the validity and reliability of such reports and the resulting data collected. For example, one explanation of cross-cultural differences could well be the way in which people in different cultures respond to the questions posed—regardless of their actual behavior. It is important to be attuned to the amount of error that may be introduced into data as a result of cultural differences in how questions are interpreted and culturally patterned differences in the way that respondents remember and answer similar questions in different countries. Use of different techniques for eliciting information can result in dramatic differences in reports of some behaviors. For example, methodological variations—using diary methods or asking people about quantity and frequency of consumption over differing intervals—may result in substantial differences in self-reported behavior. In one study of marijuana use during pregnancy, women who thought the researcher had an independent biochemical test to check the validity of their self-reports reported higher levels of use than those who did not. Being aware of the possible importance of different approaches can only improve the ultimate validity of research findings.

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[3] Thomas Babor, Professor, Department of Psychiatry, University of Connecticut Medical School, was a panelist in the symposium.

It is incumbent upon researchers to also consider the possible role of cross-cultural differences in affecting responses to the questions posed. Procedures should be built into the research methodology permitting checks on the validity of responses.

Although we may not always know as much about causality of alcohol problems as we would like, even fairly simple epidemiological data may sometimes be sufficiently related to observed drinking problems to suggest possible interventions.

Two variables that are rather closely related to alcohol problems in a society are the average daily consumption of alcohol and the frequency of intoxication. The English "gin epidemic" is a historical example of the tremendous increase in alcohol-related social problems and mortality that can occur as a function of the increased availability of alcohol, the social instigation to drink, and the prevailing class structure. Studying the factors in multiple societies that control average consumption, the frequency of intoxication, beverage preferences, and social pressures to drink or not to drink may provide valuable clues to possible points of intervention. Examining some of the changes occurring in France that currently appear to be reversing the prevalence of alcohol-related problems may be useful. Common economic, political, and social factors may be detectable that affect prevalence of alcohol-related problems in many societies. Studying causal factors involved in the recent changes in cigarette smoking behavior in American society may also assist in developing intervention possibilities.

Several participants emphasized the importance of using multiple measures of a single concept to provide indications of internal consistency, reliability, and validity. The possibility must also be considered that apparently objective data such as mortality from alcohol-induced cirrhosis may be markedly affected by the availability of medical examiners and post mortem facilities. Consideration must be given to just how such statistics are gathered and what impact this has had on their validity rather than accepting them at face value.

An Ethnographic Perspective

Mac Marshall[4] summarized issues and problems from this perspective by emphasizing six points:

1. **Using the ethnographic record in interpreting research**

   Similarities in and of themselves do not [necessarily] constitute a pattern. The burden is on the cross-cultural researcher to show a pattern in the data and the relevance of this pattern to public health concerns. Much of the interpretation of data from other societies can be labeled educated guesswork. Relevant patterns may be easier to discern, and the interpretation of findings from cross-social and cross-cultural survey research may be facilitated and made more accurate if the ethnographic record for the culture being studied is carefully considered.

2. **The importance of having someone familiar with the culture interpret findings**

   Because cross-cultural survey researchers are unlikely to be well versed in the ethnographic literature, it is important that someone who is intimately familiar with the culture be consulted in interpreting findings. Where comparisons are made with other cultures, controlled comparisons are most likely to be productive. This is a concept introduced by Fred Eggan into anthropology and stresses comparing societies on the basis of their major shared common characteristics. Examples of such characteristics include a common historical tradition, perhaps a common colonial experience, or possibly speaking the same language. Illustrative comparisons included in this monograph are the studies of native Japanese comparing them with Japanese Americans and the comparison of samples in Spain and Mexico with population samples of

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[4] Mac Marshall, Professor of Anthropology, University of Iowa, was a panelist in the symposium.

Hispanic origins in the United States. Comparisons based on other relevant shared dimensions, e.g., level of industrialization or socioeconomic development, may also be useful.

3. Importance of a holistic approach

Here the emphasis should be on studying more than simply drinking in itself to learn about alcohol use in a particular cultural setting. Stressing the behavioral context is a basic premise of a holistic approach in anthropology. It emphasizes interconnections among many variables and the interconnectedness of society and culture. There is a danger of becoming so entranced with elaborate statistical methods and tests that what is lost are the similarities and differences in people's beliefs about alcohol use and abuse and in how people behave under the influence of alcohol. Survey data need other kinds of information before the interpretive patterns, the educated guesswork that will really tell us something about cross-societal differences, can be discovered.

4. Interpretation in the context of family structure and marital patterns

Understanding marital patterns and family organization in different societies is essential. The family is probably also the best locus for active intervention around alcohol problems. Family structure is an area in which anthropology is probably more fully developed than any other discipline, and this represents a rich resource for enhancing our understanding of cross-cultural research.

5. Taking into account seasonal variability in use patterns

Possible seasonal variation in drinking patterns is also a variable that may be important in interpreting survey data collected over a brief period or at a single point in time. For example, Tooru Tsunoda pointed out that the type of alcoholic beverage consumed in Japan varies with the season. While this may be apparent to the native researcher who understands the cultural context, a researcher carrying out a survey without knowing this could generate misleading data. It also argues for the desirability of either having in-depth familiarity with the society or obtaining knowledgeable expert assistance while planning, executing, and interpreting research in cultures other than one's own.

6. Considering gender differences

> As the studies in Asian as well as Hispanic cultures in this monograph illustrate, it is very important to consider gender differences in relation to alcohol use. While social scientists are likely to be aware of psychosocial differences, they are less likely to be conscious of a growing biomedical literature that emphasizes such diverse influences on alcohol consumption and its effects as weight differences between men and women, gender differences in fat composition, effects of the estrus cycle, the role of oral contraceptives, differential disease risk, implications of alcohol use for childbearing, etc. Awareness of the possible ways in which these biological differences can have an impact on behavior is desirable.

Other participants emphasized that being aware that some gender differences [in alcohol use] are biologically based may lead to the false assumption that what we think of as male-female differences in North America or Western Europe are universal. The anthropological literature makes it clear that this is not true; there may be important reversals of role in different cultures. Existing anthropological and ethnographic literature can be very helpful in devising better survey research that takes many kinds of cultural differences into account, including gender differences.

In considering possible interventions, there is also the risk of overgeneralizing from highly industrialized nations and ignoring important differences between them and developing countries. Interventions that might not be practical in a highly urbanized area may be useful in a close knit rural setting in which different family relationships or social forces prevail. Different types of action alternatives may be indicated in some cultures depending on multiple social and economic factors.

A Clinical Perspective

Hiroaki Kono summarized this area in terms of differences in the Kurihama therapeutic system employed in Japan and treatment approaches employed in the West. In the Japanese system there are basic philosophical differences in the therapeutic orientation. For example, the Japanese patient is encouraged to face through his or her own suffering the meaning of the suffering experience itself. Emphasis is placed on the present meaning of the patient's life in terms of an unavoidable reality. Abstinence is objectified as a concrete aspect of the patient's underlying desire to possess the necessary wisdom for survival. For the alcoholic, an emphasis is placed on the internalization of abstinence as essential to the patient's self-preservation, to achieving a continuity of life purpose, and to maintaining self-respect. If the patient is to achieve realistic aspirations in the hierarchy of which that patient is a part—e.g., be promoted to the post of section chief—a traditional self-discipline is demanded which for the patient requires abstinence. To ignore this ethical imperative, the patient is reminded by the therapeutic system, represents a destruction of the freedom to achieve what is fundamentally meaningful in that person's life.

Kono emphasized that from a Japanese therapeutic perspective, looking upon alcoholism as a disease having nothing to do with morality is as prejudiced as viewing it as an entirely moral issue. Medicine in this context is not viewed as medical science exclusively concerned with and dedicated to scientific principle. Patients are not encouraged to ignore their guilt feelings, but encouraged to enlist these feelings as part of a quest for self-respect and as a means of strengthening their resolve to regain a sense of life purpose and to achieve immanent destiny. Thus, in contrast to the Western view, the patient is not encouraged to believe in a human dominance over the universe, but of a need to live in harmony with social and spiritual roles and aspirations. This concern with values is in contrast with the more detached "scientific" orientation of Western medicine.

In response to Dr. Kono's overview of East-West differences, other participants acknowledged that the meaning of life is perceived quite differently in Japan than in the Western countries with which we are more familiar. The value that is attached to "self discipline" also differs. The social ecology of treatment includes not only what goes on within the treatment context itself, but also the posttreatment environment to which the patient returns. This, too, differs from country to country. For example, in some countries there is something in the culture that marshals family resources, enlists the patient's learning history, and assists the individual in reorienting his or her life in such a way that there is a much higher probability of long-range success in treatment. What goes on during a month's formal treatment from a strictly medical and scientific standpoint may be largely irrelevant to the patient's long-range treatment prognosis, which may be more heavily dependent on family and social support for rehabilitation.

The social ecology, the philosophical context, and the norms of conduct of the culture are all relevant to questions of therapeutic approach and outcome, though these cross-cultural aspects have hardly begun to be studied.

In his summary of the clinical perspective, Raul Caetano emphasized the importance of both epidemiological and clinical perspectives in providing a better rounded view of alcohol abuse than either could alone. He noted that the distribution and clinical configuration of cases observed in a hospital ward is not the same as that seen in an outpatient setting, which in turn differs from cases detected in the larger community by epidemiological surveys. There are self-selective and other factors operating that change the disease picture depending on its context. The cross-cultural study takes this process a step further in providing a still wider perspective extending beyond a country's boundaries and culture. It reminds us of the cultural relativism of many of our clinical and research observations.

Caetano noted that there were several fascinating puzzles inherent in what had been discussed, which remain to be explored. For example, are clinical populations seen in the United States similar to those seen in other countries? If not, are these determined by cultural modes of drinking, or do differences relate to the different ways in which health care is organized or has been developed in each country? In the United States much of the treatment of alcoholism is in the hands of nonphysicians, while in some Latin American countries treatment is predominantly by psychiatrists. This has considerable impact on how an idea such as controlled drinking is likely to be perceived and developed. In the United States this concept is in direct confrontation with the prevailing ideology that total abstinence in necessary for alcoholics.

Other relevant considerations affecting outcomes include how treatment is paid for, e.g., in the United States compared to countries like England in which there is a national health service. How does this affect services and attitudes toward alcoholics, particularly if there are various, sometimes competing, groups with vested interests in developing and providing different kinds of treatment services?

Caetano also raised the question of whether treatment can be applied cross culturally, particularly in light of Kono's discussion emphasizing the treatment principles used in Japan. These principles are not at all common in either Western philosophy or psychiatry. The emphasis on human suffering as a worthwhile and enriching experience is not, of course, a part of Western medicine. We think we should alleviate suffering immediately. Suffering is not considered something that can deepen and enrich the experience of our patients. What is the internalization of the experience of abstinence in a Japanese culture, and how does it compare to that in other Eastern cultures as well as our own? We do not generally use guilt feelings of patients as an element of the therapeutic process, though Kono indicates that those powerful feelings can be transformed into a therapeutic tool in the physician-patient interaction. What are the implications of these differences?

Other cross-cultural topics are also important. For example, if the main culprit in alcoholism is drinking, and drinking is culturally determined, then what is the relationship between clinical indicators of pathology in our culture to those of other cultures? Do similar clinical symptoms represent the same level of pathology in other cultures? For example, in the Mexican samples discussed here, Mexicans were found to drink very infrequently, but heavily. Would tremors and the other symptoms we associate with long-term continuous drinking in the United States have the same clinical value in Mexico? We also see that in Japan middle-aged men drink more than young men. Is there a change in the age distribution of clinical samples as a result? Also, as Yamamoto noted, there is more flushing in nonclinical samples than in clinical samples. How does this affect people who go into treatment? Flushers appear to have an extra barrier to becoming alcoholic.

In dealing with the dependence syndrome, we also bring different perspectives that are influenced by culture. The concept of alcohol dependence may itself be a cultural construct. There is cross-cultural evidence that substantial numbers of people in Mexico, in Spain, and in the United States support the notion that alcoholism is a disease, that the symptoms will progress if there is no treatment, and that there is a need to see a physician. The idea is not always so simple, since there are also people who believe both in the disease model and that alcoholism is a moral problem. There may also be cultures in which the disease model is not indigenous but has been "imported" by the medical professions. The impact of this on clinical perspectives in different cultures is an interesting question remaining to be explored.

Our cross-national research has been mostly in general populations. It would be valuable to look at a whole new world of comparisons between clinical samples as well as general population samples in different countries.

A Concluding Note

Robin Room offered some summary observations about the conference and about the WHO Community Response project. He pointed out that most of the data was assembled opportunistically and incrementally. Although we might wish it were otherwise, it is likely that future cross-cultural studies will also be dependent to a considerable extent on similar fortuitous circumstances. Were it not for an unusual combination of political events, these cross-cultural studies would not have been undertaken. As Grant pointed out, such research with its potentially invidious comparisons can sometimes be problematical from a political point of view.

Room stressed the fact that the research that has been discussed is entirely based on one methodology—survey research. The limitations of this approach need to be candidly acknowledged. It offers a kind of 1-hour window into the situation of the particular respondent, that afforded by an interviewer conducting a structured interview. Just trying to decide what to include in the questionnaire to be used for this interview is, he pointed out, often controversial. Moreover, there is no way in which this kind of questionnaire can provide as complete a qualitative picture as an ethnographic study, or as that which can be obtained by a clinician's talking in a less structured, in-depth fashion to individual patients. We must recognize that survey methodology is a powerful tool, but only one of many that might be appropriately used in a more comprehensive program of cross-cultural research.

Cross-cultural studies also potentially involve other units of analysis besides people in the general population. Some studies are drawing on clinical populations making comparisons across countries as in some work reported here. Other cross-cultural studies are being made of accidents and injuries and their association with alcohol use. There is also a loose aggregation of researchers called the International Study of the Development of Alcohol Treatment Systems, which is looking at the clinical picture from the point of view of how countries or cultures have built their theoretical systems and other formal responses to alcohol problems, particularly since World War II. Klaus Mäkelä has mentioned the idea of a project internationally comparing Alcoholics Anonymous groups. What are the ways in which this 50-year-old unique phenomenon in the alcohol field has adapted itself to different cultural situations, and what can this tell us about the expression of alcohol problems in different cultures? Some of us have also worked on studies of how alcohol use is portrayed in films, another interesting way of trying to understand a culture, its drinking norms, its alcohol use behavior, its alcohol-related problems, etc.

International studies of alcohol control experiences are also valuable in comparing the problem rates that result with different control structures. There is also a growing record of historical research from which we may draw some comparative conclusions. Comparing what happens to immigrant groups in multiethnic countries with what happens to those who remained in a more homogeneous cultural context is potentially valuable in providing insights into cultural differences. A book by Roy Rosenzweig (1983) examines how Swedish working class immigrants drawing on their cultural heritage took a different attitude to alcohol issues from other working class people in the United States. Thus the contemporary comparisons with which we are concerned can also be informed by understanding a historical context.

Robin Room concluded the summary by emphasizing that the studies that were discussed have provided an exciting foundation for future studies and that in his view these could profitably proceed in many different directions. Different studies using different approaches can provide multiple windows into the world of differences between cultures. He also stressed the value of repeated studies over time as a key to understanding processes of change.

In response to Room's concluding summary, other participants stressed the fact that while international research that was discussed during the meeting was opportunistic, other possibilities also exist. International groups of many kinds have the potential for encouraging valuable cross-cultural study that is not dependent only on fortuitous circumstances. Such opportunities should be pursued wherever possible. Societies such as the International Society for Biological Research on Alcoholism afford the possibility of combining biological research with social epidemiological research. Other international organizations concerned with alcohol research also have the potential for expanding cross-cultural research efforts in new and exciting directions.

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